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ABSTRACT

Increased environmental problems indicate a need for educational programs to meet the goals of environmental quality. Such programs would stress ecological concepts, appreciation for the outdoors, knowledge of appropriate outdoor recreation activities, an understanding of the interrelationships between nature and humanity, the development of positive attitudes toward the natural and man-made world, and the ability for citizens to work together democratically to solve environmental problems. The programs should be interdisciplinary and contribute to the goal of understanding, appreciating, and preserving the environment. They would be directed toward all age levels, from pre-school through adult. The outdoor education movement has long served as a valuable means of implementing the goals of environmental quality. Experiences in school camping, school site development, beautification, ecological studies, outdoor recreation activities, and citizen action have helped to produce environmentally-aware citizens. Outdoor education is shown as an educational innovation, and guidelines are provided for its inclusion in a school curriculum, and for specific aspects of outdoor education programs. Evaluative studies of outdoor education are presented, with 18 recommendations for future directions which environmentally-focused outdoor education may follow. (Author/KM)

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OUTDOOR EDUCATION AND ITS CONTRIBUTIONS TO ENVIRONMENTAL QUALITY

A RESEARCH ANALYSIS

by

ROBERT L. VOGL
and
SONIA VOGL

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ABSTRACT

Increased environmental problems indicate a need for educational programs to meet the goals of environmental quality. Such programs would stress ecological concepts, appreciation for the outdoors, knowledge of appropriate outdoor recreation activities, an understanding of the interrelationships between nature and humanity, the development of positive attitudes toward the natural and man-made world, and the ability for citizens to work together democratically to solve environmental problems. The programs should be interdisciplinary and contribute to the goal of understanding, appreciating, and preserving the environment. They would be directed toward all age levels, from pre-school through adult.

The outdoor education movement has long served as a valuable means of implementing the goals of environmental quality. Experiences in school camping, school site development, beautification, ecological studies, outdoor recreation activities, and citizen action have helped to produce environmentally-aware citizens. Outdoor education is shown as an educational innovation, and guidelines are provided for its inclusion in a school curriculum, and for specific aspects of outdoor education programs. Evaluative studies of outdoor education are presented, with recommendations for future directions which environmentally-focused outdoor education may follow.

A NOTE ON TERMINOLOGY

Some educational programs have met and are meeting the goals of environmental quality. But there is disagreement about terminology. Some educators feel that the various terms for outdoor-related education refer to the same process, while others define precise areas of the curriculum by specific names. Variations in the use of terms include such labels as conservation education, outdoor education, recreation education, environmental education, and environmental studies. In using the terms interchangeably, the writers recognize both the original authors' choices of terms, and that the goals of environmental quality can be reached through various approaches.

Although learning experiences involving the outdoors have been given many labels, Smith (1969) asserts that whatever the specific title, the goals are basically common -- the utilization of learning, the guarantee of healthful experiences, and appreciation, beautification, and preservation of the natural environment.

TABLE OF CONTENTS

	Page
INTRODUCTION	1
The Goals of Environmental Quality	1
The Call for Environmental Studies	3
OUTDOOR EDUCATION AND THE IMPLEMENTATION OF ENVIRONMENTAL QUALITY	5
Increasing Interest in the Outdoors	5
Ecology and the Environment	6
Rural and Urban Aspects of Outdoor Education	7
Social Aspects of Environmental Quality	9
PROGRAMS IN OUTDOOR AND ENVIRONMENTAL QUALITY EDUCATION	13
Goals and Objectives of Outdoor Education	13
Outdoor Recreation	14
Leadership Training and Related Materials	23
Community Involvement	26
Adult Outdoor Education	28
DEVELOPMENT AND IMPLEMENTATION OF OUTDOOR EDUCATION PROGRAMS FOR ENVIRONMENTAL QUALITY	30
Guidelines for Educational Innovations	30
Guidelines for Outdoor Education	36
EVALUATIVE STUDIES	43
Objectives of Outdoor Education	43
The Status of Outdoor Education in Relation to the Goals of Environmental Quality	44
Outdoor Education Compared to Indoor Education	46
Attitude and Behavior Change and Outdoor Education	47
The Status of Research in Outdoor Education	53
RECOMMENDATIONS	55
Conclusions	56
REFERENCES	57
ABOUT THE AUTHORS	66

INTRODUCTION

The Goals of Environmental Quality

In any society, people use natural resources to provide the material basis for existence. The use made of available natural resources depends greatly on people's knowledge of and skill in using them. Within the United States and much of the world, increased population, urbanization, industrialization, and the production of goods and services have expanded the demands of individuals, firms, and public enterprises for natural resources.

The massive production of material goods has resulted in widespread damage to the environment. Such production yields monetary returns to those who produce the goods and lowers costs to those who use them, but damage to the environment has been ignored in the production, distribution, and use.

Advocates of environmental reforms think that material goods for private and public consumption have been overproduced. Changes in the behavior of individuals, governments, and firms could reduce consumption and environmental damage. Given the nature of the American society, public consent is important in any attempt to lessen adverse impacts on the environment. A variety of alternatives to reduce environmental damages includes appeals to individuals, changes in market transactions, and government policies reflecting a higher value on environmental protection.

Individuals can be persuaded to decrease their consumption through voluntary actions. An appeal can be made in terms of their own self-interests and of a moral obligation to protect the environment and preserve it for future use. Teaching students recreational skills which depend on the individual rather than on the equipment can lessen reliance on consumer goods.

The market itself can help to reduce consumer demands for resources. A great part of environmental damage can be prevented by incorporating pollution control technology into the price of goods and services, and the resulting higher prices will lower consumption.

Government action can also reduce environmental damages. Restrictions can be placed on actions which produce environmental problems. Incentives can be created to decrease production of environmentally-damaging products and to encourage the production of less-destructive goods and services. Research to design less environmentally-damaging products and technology can also be stimulated.

However, the conflicting force of divergent views tempers the quest for environmental quality. A widespread hesitancy to give up individual freedoms, especially if government controls are involved, and a preference for immediate gains in material possessions counter the desire to set aside natural resources for future use. The abundance of low-cost material possessions also lessens pressures within the society to redistribute the existing supply of material goods more equitably.

Given the conflicting goals common to a pluralistic society such as ours, sufficient agreement to correct societal problems appears, primarily in response to crisis situations. Eventually, the extent of environmental damage becomes so far-reaching that it is obvious enough to large numbers of people to form a sufficient base on which to re-define societal goals.

At some point, it becomes necessary to restrict individual actions that conflict with the well-being of the general society. Without restrictions, some resources fall below recovery level.

It is difficult to locate precisely the point where such restriction becomes necessary. The problem may be an outgrowth of something widely ignored, like air pollution, or it may arise suddenly and dramatically, as in the case of thalidomide. The regulation of individual actions occurs only when large costs to the general society are recognized.

Even when problems are widely recognized, the appropriate remedial action is often uncertain. Since human nature is complex and involves both rational and irrational components, widespread social agreement is somewhat unpredictable. Technological processes and governmental institutions are imperfect and act in ways inconsistent with environmental quality.

Widespread public concern over an issue like environmental quality presents the difficult task of defining what constitutes quality and appropriate measures to deal with the attendant problems.

Within this context, education has a series of roles to fill. It must arouse and sustain public interest in environmental quality and provide the expertise necessary to solve the problems, and do it in a way intellectually honest enough to avoid the pitfalls of presenting only one side of the story.

The Call for Environmental Studies

The call to action for environmental studies was documented in The Environmental Problem (Morrisett and Wiley, 1971), which compiled the essence of the 1970 hearings for federal funding to stimulate development of environmental programs within the nation's schools. In introducing the hearings, Chairman Brademas stated, "If we are to be able to make substantial progress in meeting our ecological crisis, we are going to need a citizenry informed and educated about the whole spectrum of issues that are called environmental; and we are going to require as well changes in basic attitudes toward the environment and man's place in it [p. v]."

In the pursuit of environmental understandings (passim), it is important to consider the work already done in outdoor education and conservation education. The thrust of outdoor education has always been with the effective use of the outdoors, in both urban and rural settings. The interests of the child were always regarded as an important motivation in outdoor studies. The best way to influence children is through experiences which emphasize learning by doing. Sensory experiences of hearing, tasting, touching, seeing, and feeling are important. Involvement in the search for new knowledge and making and using one's own instruments for ecological studies are highly desirable.

The examination of ecological principles is an important educational emphasis. How do ecosystems work? What is ecological balance? How is it achieved in natural systems and how does man upset it? What can he do to maintain it? What do organisms, including man, need to survive? What are the essential man-nature relationships to be stressed in ecological studies?

The educational program is multidisciplinary and includes the study of nature writings from American literature, artistic responses to the outdoors, and the impact of architecture on man and his environment.

Environmental studies should emphasize the local environment, which provides many opportunities for students to explore and study and become involved in community affairs. They should include the study of natural and man-made environments, both urban and rural. The home, the neighborhood, rural areas, and the city would receive equal concern.

Such studies should not focus exclusively on the local environment, but also on state, regional, national, and international problems. Pollutants like DDT and radiation go beyond local origins. International considerations should include studies of other cultures -- how the people live, their relationships to nature, and our relationships with them.

De-emphasis of materialism would promote a new life style. Wealth and happiness are not synonymous. Youth should be encouraged to pursue personal fulfillment, self-expression, and creativity. Their values should be modified through an interest in the environment. A movement back to the earth should be stimulated. The overall concern should be not only with material progress but also with the quality of the human experience. Generally, children enjoy camp experiences, which should be an important part of any program.

Resultant attitude changes should do more than lessen the desire for material gain. They should also create an understanding that many people share the effects of environmental degradation.

A basis for citizen action should involve students in situations in which they make choices for alternative actions and become aware of each one's own impact on the environment. Students would monitor the environment, learn to recognize and solve problems, and be motivated to act. They would understand the technical details of pollution control. They would learn how their government works, the bias of its agencies towards the industries they regulate, and how government policies can be effective in correcting problems. They would also learn to set individual and collective goals for environmental reforms, and understand the individual sacrifices involved in collective actions.

OUTDOOR EDUCATION AND THE IMPLEMENTATION OF ENVIRONMENTAL QUALITY

Outdoor education is a valuable means of implementing the goals of environmental quality. It helps students learn by doing, by solving problems, and by having direct, concrete experiences rather than abstract ones (Miller, 1969). It provides an opportunity to build better human relationships between people of diverse cultural backgrounds and experiences and to develop an awareness with the earth, the universe, and their creator.

A strong relationship between outdoor education and environmental education indicates that the outdoors could be used not only for improving education, but also for gaining understanding of the environment and man's relation to it (Chase, 1969). This can, in turn, lead to improved environmental management.

Increasing Interest in the Outdoors

During recent years, widespread interest in the outdoors has grown, providing increased opportunities for developing public awareness of environmental problems and desire for high environmental quality.

Increased use of the outdoors by families offers an opportunity to teach children how to protect forested and natural areas from contamination (Heffernan, 1967). Important concepts about the needs of living things can be learned in outdoor settings. Outdoor experiences can help individuals to understand the physical world they live in and the effect of that world on themselves; and acquaint them with the natural resources of the world, the ways in which they are processed, and the need for their wise use. A wide variety of outdoor experiences helps the learner relate to the physical world and appreciate its infinite variety.

California has reported an amazing growth of interest in natural and environmental studies (Gilliam, 1971). An average of 20 courses per semester have been offered by Berkeley's extension program in natural environmental studies. Park attendance in the state in 1970 was up 25 percent over 1969 figures, probably because people are recognizing

that "industrial civilization is out of kilter [p. 14]" and that humans need to interact with nature in the out-of-doors.

According to a survey of 10 outstanding high school biology teachers, their students liked most those activities provided least frequently (El-Dib, 1961). More intelligent students, as measured by I.Q. scores, preferred activities which allowed for individual expression while demanding active participation. Outdoor activities were the preferred activity of most students.

Conservation is often learned from a book, but learnings from direct observations are more lasting (Blough, 1966). Outdoor education which relies on direct experiences is necessary for children no matter where they live. City children are often totally without a concept of the natural world; suburban children have a limited, landscaped view of nature; and rural children, who live with nature, are often unaware of it and of what it means.

Concerned teachers now recognize that students learn by doing and by having opportunities for direct experiences, observations, and interactions with the environment (Dorsey, 1972: p. 16). Through direct experiences, concepts can become meaningful activities; appreciations, wholesome attitudes; and conservation, a part of each student's life philosophy.

Increased public interest in outdoor pursuits suggests the need for education for the wise and satisfying use of the outdoors and natural resources (Smith, 1966). This should be the aim of outdoor education.

Ecology and the Environment

Adequate educational programs are necessary to offset our continually-growing environmental problems. Ecology is a basic component of such a program.

Ecological studies analyze large units of the environment, referred to as ecosystems, and seek generalizations about relationships between forms of life and between life forms and the physical aspects of the environment. Such understandings are essential if man is to assess the potential damage from contemplated uses of the environment. Ecological

studies also give students intimate contact with nature, often leading to a greater appreciation of it.

Rural and Urban Aspects of Outdoor Education

Outdoor activities have long been viewed as a way to develop positive conservation attitudes (Gustafson, 1954). "The acquiring of a 'conservation conscience,' or harmony between man and the land, is an essential component of a liberal education [p. 341]." The use of the outdoors is the only effective means of developing a conservation ethic (pp. 348-349). The outdoors stimulates interest, provides objects of study and areas for experimentation, and is the best setting for the use of leisure time.

There is need for rurally-oriented education, particularly in colleges, where most college students are urbanites (Gustafson, 1954: p.349). A small, rural college could provide best for individual needs of students by acquainting and interesting them in the unfamiliar outdoor environment. Such an opportunity could evoke emotional responses and appreciation that lead to conservation concepts and attitudes and a conservation ethic.

Conservation offerings by colleges can provide potentialities for nature study and development of sound conservation ideas. But they have not always been fully realized. Many outdoor educators believe that youth have not changed, but the conditions under which they live have (Kelley, 1972). Most of our current culture is urban oriented. Urban man misses the earth. Urban youth have been robbed of their reason for existence and are forced into conformity. Outdoor education provides the opportunity for them to learn what the earth is really like and about plant and animal life, to recognize how the balance of nature is maintained, to observe problems in nature, such as erosion, acquire insight to correct them, and understand the need for conservation.

Some educators think that rural experiences alone are no longer sufficient for the environmentally-aware citizen (Stapp et. al., 1969).

A survey of conservation education practices in the 10 largest cities in Wisconsin revealed that, although curriculum coordinators placed greater emphasis on urban-oriented issues, the material presented by teachers (p. 50) was focused on rural-oriented issues (Vogl, S., 1962: p. 39).

Much conservation education still seems to be out of touch with urbanites, who comprise about three-quarters of American citizens, and ineffective and ill-adapted to present needs (Miles, 1971). Urbanites must be convinced of the need for conservation, since they often do not recognize their dependence on nature (Yambert, 1969). Conservation education has long been rurally oriented -- but conservation problems pervade society.

A common approach to conservation education has been field trips to new and strange surroundings, again removing issues from the daily lives of the students. But conservation concepts can be illustrated close to the average urbanite's home: Watershed, for example, by drainage outlets or street sewers; microclimates, by examination of lichens growing on the side of a building; and succession, by observing the progression from lichens to moss on a monument.

Improved conservation understanding may be manifested in many ways, including the production and use of longer-lasting materials and observation of the principle of strength through diversity in the planting of many species of city trees.

The need for a change from agrarian-oriented conservation education, which limited students' opportunities to develop understanding of their total environment, to a broader orientation was seen by Visher and Hone (Dorsey, 1972: p. 24).

Summary

The rural setting still makes important contributions to the development of environmental literacy. To abandon or even minimize the use of rural environments would be a disservice equal to that of the previous underutilization of the urban setting.

Rural experiences should not be negated to allow only urban experiences, nor urban problems ignored in favor of rural appreciations. But, rather, the educational potentials of the various human environments, how they can best be used to achieve educational purposes in general, and environmental literacy in particular, should be re-thought.

Human uses of resources, the techniques for using them, and the cultural values expressed in the conversion of resources to goods and services transcend the boundaries of rural-urban geography. They are

part of a complex series of relationships between people, their culture, and their environment.

This complex web of relationships can be separated into component parts for more intensive study. Some studies should be made in rural areas, and others in urban areas. Exclusive focus on one setting can give a narrow view of environmental problems and involve students in consideration of a limited range of alternatives to reduce the problems.

After human and natural relationships to environmental problems are separated and studied intensively, they need to be reunited into a broad perspective.

Social Aspects of Environmental Quality

The goal of environmental quality is being pursued through the study of its ecological and social aspects. For many years, outdoor and conservation education focused heavily on nature study and ecology. Recently, the social aspects of environmental issues have received greater emphasis.

Appreciation for high quality in the natural and man-made world must be developed. But this does not happen automatically; it must be taught. The democratic principles essential for citizen action toward high environmental quality must be instilled. Although these learnings can take place throughout life, childhood is the ideal and logical time to initiate understanding of ecological and democratic principles.

The Question of Values

Values, attitudes, and factual material must be presented in outdoor and environmental education programs. Facts alone rarely change behavior, the objective of educational programs emphasizing environmental quality.

Some educators interested in environmental reforms think value clarification is important to objective presentation of environmental issues.

Recent thrusts in science education deal with the question of values and the value implications of factual material (Harmin, Kirschenbaum, and Simon, 1970: p. 16). However, teachers are cautioned against indoctrinating either their own or society's values. This poses the problem of teaching values without dealing with one set of them. Teachers are advised to point out the implications of science in the student's life, such as wormy vs. non-wormy, but sprayed apples. The student then

chooses which stand to take and what action will uphold his stand, and the teacher is only a guide. A decision to use value clarification processes is a value position in itself and just one of many teaching strategies.

Controversial Issues

In addition to helping students clarify their own values, science teachers are often faced with the dilemma of presenting controversial issues while protecting their jobs (Whitney, 1970: pp. 25-26). But by avoiding controversial issues, they fail to present the subject accurately. They have an ethical obligation to "tell it like it is."

Scientists make their values known wherever scientific and technological phenomena are politically or economically significant. Examples occur frequently in the press and on TV and radio. Real issues must be presented to students. They must become informed on real issues, to gather facts, and to analyze data. The public should be informed why the teacher is delving into such issues as population control, wilderness preservation, government-sponsored research on chemical and biological warfare, nuclear weapon production and deployment, and pollution studies. Goals and objectives should be clearly written out and distributed to the public.

The Problem of Apathy

Citizen apathy prevents the achievement of the goal of high environmental quality. To function in an intelligent, effective manner, individuals must have a sense of responsibility. Childhood is a critical time for the development of such a sense of responsibility (Hess and Torney, 1968: pp. 250-251). Schools are a major force in the political socialization of children, helping them to develop understandings of how the political system operates and attitudes and beliefs favorable to their roles in it (Langton, 1969: pp. 84-90).

An experiment to test theories for eliminating apathy focused on citizenship rather than conservation or environmental issues. However, citizenship has implications for outdoor education and the pursuit of environmental quality. The framework for the program was built on the theories of Robinson, Pitken, Coleman, and Hodgkinson (Morrison, 1971).

Morrison chose four of Robinson's goals of civic education (p. 18) within democratic principles as his primary goals: Development of knowledge and skills to assist in solving current problems; awareness of the effects of science on civilization and the use of science to improve the quality of life; ability to make value judgments for an effective life in a changing world; and participation in decision-making through expression of one's views to representatives, experts, and specialists.

Morrison considered the overriding objective of civic instruction in the high school to be the development of good citizens, defined by Pitken as mature individuals, having qualities of emotional development that make them free to reason rather than to be dominated by purely emotional thrusts (p. 19). To develop good citizens, Pitken recommended that educators help students build positive self images and the capacity to resist pressures for conformity, and provide experiences to give them confidence, self-reliance, and independence.

Morrison also recognized that the effectiveness of civic instruction depends on understanding adolescent societies (p. 24). Educators must recognize that adolescents are no longer children, but individuals who make choices to spend their time and energy as they see fit. He agreed with Coleman that education, to be successful, must compete openly with cars, sports, social and other activities important in the adolescent world. Coleman recommended capturing the youthful energy and competitive spirit shown in athletics by involving adolescents in the actual problems of the community, state, and nation.

Hodgkinson's theory was based on self-motivation to create a change of attitude (p. 27). He pointed out that people come to over-value those things for which they have worked hard, and that expenditure of effort may be one of the best motivational techniques for teachers who want students to develop deep and long-lasting interest in a subject.

Using these theories of human behavior and motivation, Morrison sought to produce attitude changes in students in a summer school civics course by requiring them to expend more effort in experiences in the community (p. 28). They were involved in afternoon and evening meetings and some all-day sessions, and a program saturated with 51 field trips

and outside speakers. Representatives of local, state, and federal agencies served as resource persons for the course.

Two techniques were used to evaluate the success of the course (p. 89). On a national standardized test of social studies concepts, Caucasian students in the experimental class showed a significant gain in cognitive learning over students in a control class; but Black, Mexican-American, and Oriental students failed to make significant gain. School counselors were also asked to rate students' in-school citizenship and behavior. They thought citizenship of the experimental group had improved. But participation in school-community activities following the experiment did not increase significantly, and referrals for disciplinary reasons did not show any important decrease.

Summary

The quest for environmental quality involves many social aspects. Value questions need to be considered. Controversial issues are often discussed and policies need to be developed to guide their consideration. Strategies for overcoming citizen apathy are important aspects of educational programs.

PROGRAMS IN OUTDOOR AND ENVIRONMENTAL QUALITY EDUCATION

Programs in outdoor education are many and varied, and include activities such as overnight camping, short field trips, school site development, and recreational activities.

Goals and Objectives of Outdoor Education

The goals of outdoor education, according to most writers, encompass general education, social, and environmental goals.

The ultimate goal of education is to give the individual the responsibility to pursue his own education (Blackman, 1969). Outdoor education fits well into this pattern, because it uses the unity and wholeness of nature to facilitate learning for the individual. It provides opportunities for students to develop knowledge and appreciation of the environment and man's relationship to it through first-hand experiences in exploration and discovery, and to establish interrelationships to help in solving the problems of humanity.

The basic objectives of outdoor education are to help students learn the value and wise use of our natural resources, how to live democratically with other children and adults, and to assume responsibility for group welfare (Hlough, 1966).

More elaborate objectives include the learning experiences of children (developing a scientific attitude, using scientific thinking, developing skills and abilities to understand, enjoy, and use the outdoors; and believing in what is gained), the recognition of individual worth and the interdependence of all life, and an appreciation of the historical heritage of the outdoors (Swan, 1969). The basic, underlying objective is change in students.

Outdoor education develops awareness and gives greater meaning to abstract knowledge through first-hand experiences (Rosenstein, 1970). Independent study and the pleasure of discovery motivate individuals to seek knowledge. Outdoor education experiences provide opportunities to improve one's self image, develop an understanding of and sensitivity to the environment, and to recognize the interweaving of an individual and his world. National concern for the environment has led to educational

priorities of developing values, attitudes, and appreciations which will result in a respect for the environment and the drive to live harmoniously with it. Outdoor education makes an essential contribution to the achievement of these goals.

Outdoor education experiences with diverse activities are offered in many countries of the world (Mackenzie, 1970). In all of them, the basic goal is a healthy, natural environment, with the outdoors the medium for education. School camps in New Zealand, Australia, and South Wales stress social growth. In Sweden, the emphasis is on environmental education, especially the effects of environmental contaminants such as DDT, and sports activities are allowed on holidays. Rugged outdoor activities are the most popular form of outdoor education in Great Britain.

German outdoor education places students in contact with nature and helps them to appreciate the natural world and its processes (Goering, 1968), and in England it includes ecology, environmental studies, and work in conservation programs (Carthy, 1970). Students in Scotland are given field study experiences related to a specific subject area, and encouraged to gather data for later problem solving in the classroom (Jones, 1968). Positive attitudes toward an understanding and appreciation of nature, skills for outdoor living and outdoor recreation, sound minds and bodies, leadership skills development, and idea exchanges are emphasized in Japan's senior high school camps (Ebashi, 1968).

Summary

Some major goals and objectives of outdoor education are utilizing the unity and wholeness of nature to pursue one's own education; learning to live democratically with others; assuming responsibility for group welfare; understanding, using, and enjoying the outdoors; and developing positive values, attitudes, and appreciations for the environment.

Outdoor Recreation

Need for Outdoor Recreation

As a beneficial, renewing experience, outdoor recreation provides an escape from urban conditions (Jensen and Thorstenson, 1971: p. 1). Its value is its contrast to the workaday world, and not just an extension

of it. The more complex society becomes, the more meaningful contact with nature might be. But mass uses dilute opportunities for solitude, thus discriminating against a majority of users who seek isolation in the outdoors.

Studies of outdoor recreation behavior patterns of college students enrolled in a psychology course at Appalachian State University were based on 44 outdoor recreation activities (Gunn, 1972). The results indicated that recreation is a need-fulfilling behavior, with significant interrelationships among need states, personality traits, and outdoor recreation activities.

Leopold's concepts are important in understanding the meaning of wilderness (Olson, 1971: p. 7). Essential components in this understanding are the development of an ecological conscience, a land ethic, or feeling of morality toward the earth; a sense of personal responsibility for what we do to the earth; and an understanding of conservation as a point of view involving human freedom, dignity, and a good way of life.

Man is adaptable to many rapid changes (p. 9). But natural changes occur over long periods of time, while cultural change may be accelerating at a rate exceeding human capacity to adapt. The extensive use of tranquilizers may be a crude index of human incapacity to cope with these changes. Wilderness provides opportunities for renewal (p. 11). It is a baseline against which changes can be compared and a place to study all living and growing things, including humans, to see what is normal.

Factors Increasing Outdoor Recreation

More leisure time, urbanization, higher incomes, and the growing use of autos are forces behind the rush to the outdoors (Crafts, 1972: p. 13). According to the 1962 ORRRC study, growth in population and disposable income, more higher-income families, more leisure time, and greater mobility increased the demand for outdoor recreation (North, 1972: pp. 90-91). Competition for discretionary dollars, non-resort vacations, urban concentration, and preference for more income rather than more leisure helped to lower demand. Younger professional people with higher incomes, living in suburban or rural areas, are the greatest users of recreation, although increased use by retirees, Blacks, and the handicapped is predicted (Huyck, 1972: p. 70).

Most outdoor activities are relatively simple, with water the chief attraction (North, 1972: p. 92). Beach use is rising rapidly (Huffstutter, 1972: p. 56).

Young people's reasons for engaging in an educational recreation program of wilderness use conducted by the National Outdoor Leadership School Wilderness Expeditions pointed up recent trends in recreational pursuits (Henry, 1973). Active types of outdoor recreation such as bicycling, walking, playing outdoor games, camping and hiking, have become more popular (pp. 2-4). Since 1959, use of wilderness has increased by 10 percent a year. The wilderness setting attracts disproportionate numbers of recreationists from higher income groups, professional and technical occupational backgrounds, higher education levels, and urban residences.

The number of organizations using natural environments for educational purposes has also increased. In the National Outdoor Leadership School program, achievement and curiosity were the most important reasons for participation. Students were highly motivated to learn about wilderness and master the related skills (p. 68). Conducting such programs without serious damage to participants or to the environment is important.

Recreation Problems and Solutions

The majority of American people live in urban areas where the least land is available (Hofe, 1972: p. 198). But 75 percent of all recreation is close to home, and takes place after work or school, or on short outings. This points to a need for more opportunities for evening and weekend recreation closer to the homes of most people. Only 25 percent of the facilities and 3 percent of the land available for public recreation are in urban areas. Land acquisition and facility development of county parks could become important (p. 199). The visitor load could be spread to lessen damage to the environment (p. 200). Facilities could be expanded on either existing or new recreational land.

More national parks for city dwellers are needed (U.S. News, 1972: p. 216). The goal of federal planners is one major urban national park for every United States city with a population of 250,000. Private lands are also a possible source of recreational opportunities (Nelson, 1972). Rights-of-way could be established in them. It would then be

necessary to build a sense of responsibility in users so that they preserve and care for them properly.

Use of the outdoors by increased populations, largely urban dwellers, has led to some unforeseen problems (Crafts, 1972: p. 13). Many urban users of outdoor recreational areas lack the deep emotional involvement with the outdoors characteristic of those who grew up in the country, and their impact on the environment has been adverse (Clawson, 1972b: pp. 21-26). Increased littering and damage to vegetation and facilities may result from the lack of involvement. Maintaining, renewing, and improving natural areas have become problems. The solution to management will lie in determining the motives, sensitivities, and responses of people to outdoor stimuli. Although some people react negatively to management strategies, tolerance of destruction can be considered another form of management.

If a major objective of recreation is escape from a controlled society, managers of recreation resources face unique challenges. The need to control recreational behavior becomes obvious only after damage to the resource is fairly extensive. The avenues for social control are through self-discipline of the members of the society and through rules and regulations. Self-control can be based on respect for authority, perception of its necessity and acceptance of its legitimacy, its favorable impact on the self-interests of participants, and a knowledge of the appropriate way of using outdoor resources. If control is achieved through rules and regulations, it is ultimately enforced by some form of punishment.

In a few years, the heavy demand for outdoor recreation is expected to overtax the facilities to the crisis stage (Jensen, 1972: p. 31). The most desired areas, such as those for hunting and fishing, will be the most limited. This will require a diversion of people to less popular areas, coupled with additional fees, reservations, and patrols.

The national parks are already overused (Johnson, W., 1972: pp. 58-61). Conflicts between nature users, searching for solitude, and people-seekers, exemplified by teens escaping parental control, have been numerous. The rights of those who seek the original values of the parks are preempted by those who seek recreational experiences which

could take place in many other locations. Alternative recreational sites are necessary to relieve this excess use. An increase in day, rather than extended use, of parks and expanding transportation are promising trends. Increased use of mass transit systems would reduce congestion and pollution, and allow visitors to enjoy their visit more fully. Walks to primitive areas and mass transit to scenic areas within the park could be encouraged.

Recreational vehicles have also had adverse impacts on the outdoors (Michaelson, 1972: p. 190). Snowmobiles are dangerous -- excessive speed has caused numerous injuries -- and damage the environment by disturbing wildlife and vegetation. Animals chased from their natural habitat often die later from hunger and exhaustion.

Enforcement of law and order in parks is becoming more difficult (Campbell, Hendee, and Clark, 1972: pp. 138-144). Theft, vandalism, and rule violation are common. Campers are responsible for a good deal of damage, but outsiders also come in and damage natural areas. Preteens are often destructive as a part of their play. Parents who stay in parks all week as an escape from the city, with the father commuting on weekends, are sometimes unable or unwilling to set appropriate standards for their children. Irresponsible adults take firewood wherever they can get it; pound nails into trees to hang things on; drive vehicles off designated areas; build fires under hazardous conditions; empty sanitary tanks into filled or closed dumping stations; camp in illegal places, damaging natural features; and are either ignorant of, lack an understanding of, or selectively ignore rules.

The role of rangers then is teaching people to appreciate nature, to develop positive environmental values, and to be aware of their own and others' violations. More informational and interpretive programs might help to build appreciations and feelings of personal responsibility.

Many local governments lack the strength and the will to plan comprehensively, and rely on state and federal governments to do it (Heller, 1972: p. 217). But local units can act cooperatively and create regional planning bodies for park acquisition in metropolitan areas.

Both public and private lands can be developed to serve multiple purposes. Private owners can grant scenic easement on lands used for

recreation and be given a tax rebate for providing public recreation (Hodges, 1972: p. 105). Some rights-of-way could also be purchased for recreational purposes. Public lands can serve multiple purposes -- recreation, mineral exploitation, timber harvesting, wildlife preservation, cattle grazing, and watershed protection (Milek, 1972: p. 72). Westerners feel that too much land for recreation use prevents their economic development, while Easterners feel that recreational land is scarce and should not be sacrificed for other purposes. Multiple use may be an answer to the conflict. Parks must be operated within their user capacity (Frome, 1972: p. 159).

Need for Recreation Education

To preserve the recreational environment, the environmental literacy of citizens must be increased, and the individual's feelings of having the right to do whatever he wishes to the land must be overcome (Jensen and Thorstensen, 1972: p. 127).

Few people know how to get information on parks and their recreational opportunities (Clawson, 1972a: p.66). Information is also lacking on people who do not normally come to parks -- their personal backgrounds and their concepts of man and nature and man's responsibility for nature.

The public must be alerted to the emerging problems in outdoor recreation, especially rising demands for water (Shaw, 1972: p. 37). People also should understand what an ecosystem is, and how to change their personal habits of carelessness, wastefulness, and indifference to natural systems (Randall, 1972: pp. 178-179).

Participants in outdoor recreation need intelligent preparation and guidance for their activities (Jensen and Thorstensen, 1972: p. 222). They also need to develop skills, knowledge, appreciations, interests, and desirable attitudes to derive optimum benefits from outdoor recreation. People must be educated to an awareness of the tangible and intangible benefits from the outdoors. A broader range of activities beyond ordinary team sports is desirable (Wren, 1972: p. 163).

The ability to interpret nature is important to understanding and appreciating natural areas (Garrison, 1972: p. 202). Recreationists who understand are apt to be more protective of facilities and better supporters of parks than those unfamiliar with nature. Self-guiding

trails, roadside exhibits, and personal contacts with rangers can help to develop familiarity.

To derive satisfaction from a recreation area, the user needs to know the natural features and the forces and events which maintain them, and how each individual's recreation changes the environment (McLean, 1972: pp. 223-225). The objective of such an educational program would be appreciation and understanding of the natural environment and the need for regulation of activities to minimize impact. An integrated approach to understanding the role of man in nature and all aspects of the natural and man-made environment should be provided to potential recreators.

Education has formal and informal channels. Formal schooling reaches the greatest number of people, but both can provide real experiences to promote understanding and appreciation of natural phenomena. School sites can be used to create awareness of natural environments in the neighborhood.

Preparation of Environmental Interpreters

Interpreters play a major role in educating the public in formal recreation and park areas. Recognizing the confusion about environmental interpreters, Mahaffey investigated variables which could be useful in establishing more explicit curricular guidelines (Mahaffey, 1972).

Only two curricula for preparing environmental interpreters were identified; all other programs are options, specializations, or single-course offerings. Consensus on the philosophy, content, general approach, activism of professionals, and the ethics of their involvement in social-political issues is sufficient to direct their preparation.

Ten skills were assessed for their usefulness. Public speaking, writing, and audio-visual operation skills are essential. Photography, taxonomy, artistry, and display construction were useful. But drafting, bookkeeping, and typing are not consistently useful enough to be included within a curriculum. More information is needed to assess the preparation and impact of interpretive work on the public.

Outdoor Education and Recreation

Outdoor resources are necessary for recreational pursuits (Carlson, 1968). Present trends indicate ever-increasing uses of the outdoors. An

important undertaking to meet this growing demand on natural resources is educating people to appreciate and protect the natural resources they use. Consumptive uses of the outdoors, such as hunting, fishing, and rock collecting must be controlled. Higher value must be placed on the conservation of wildlife, plants, soil, and water. Aesthetic pursuits in the outdoors should be encouraged. But to teach people adequately, outdoor experiences are needed. Outdoor education provides these experiences.

Queens College of New York has a program in outdoor education and camping in the Department of Health and Physical Education which may serve as a model for other recreation education programs aimed at improving environmental quality (Loret, 1969). Program objectives include providing experiences to familiarize students with natural environments; developing adequate skills to live comfortably in the outdoors, including fire making, tent setting, cooking, tool use, and etiquette; realizing the need for interdisciplinary approaches; and developing positive attitudes toward the conservation of natural resources.

With our growing leisure time, it is imperative that schools teach its wise use (Boutwell, 1969). The teen years are the ideal time to introduce activities and patterns which will remain with an individual for the rest of his life.

Presenting recreational opportunities for inner city youth prompted the development of a study module in recreation for high school students (Consumer, 1972). Materials presented in the module include an introduction to and description of recreation; an account of the time and money spent on recreation in the United States; types of recreation, from spectator sports through creative activities; inventories of recreational opportunities in the city and in the country, including camping and wilderness experiences; and bicycling, hosteling, motoring, and camping.

Most sections emphasized discussions and readings, but some attempt was made to provide direct experiences in the study of recreation. Recommended activities were a visit to a camping and travel show, the use of maps in locating a campsite, and investigating the adequacy of campsites in the area. Directions for interviewing a travel agent included finding out what kinds of trips were available, what their costs were, and what services the agent offered.

Such a module, while not strictly outdoor education oriented, provides the initial step in appreciation of the outdoors for urban

youth by exposing them to broader recreational opportunities and the possibility of choice.

The Enrico Fermi Elementary School in Chicago does not stop with promoting awareness of recreational opportunities within the classroom. Principal Raymond Jerrems believes that if inner city residents have not actually experienced varying recreational patterns and are not expected to experience them, activities in a new setting, such as a park, will simply transfer home patterns to a different location. Sixth-eighth-grade students are deeply involved in outdoor educational activities in the surrounding community and natural areas. They have learned through practical studies to appreciate the role of trees in their environment, and how to care for them. Through ecological studies in local parks, Cook County Forest Preserves, and social agency camps, they have developed a sense of identity with and enjoyment of the outdoors. A highlight of their spring program, seining for smelt in Lake Michigan, combines ecological, recreational, and economic experiences.

The outdoor education project of the American Association for Health, Physical Education and Recreation has been active for many years (Smith, Carlson, Donaldson, and Masters, 1963). In cooperation with business, industry, and educational leaders in recreation, it encourages schools, colleges, and agencies to provide instruction in the skills, attitudes and appreciations necessary for a better understanding of the outdoors. It encourages outdoor recreation and activities such as archery, hunting, fishing, and boating. Skills and attitudes consistent with environmental quality are stressed through active participation.

Summary

Outdoor recreation is a beneficial, renewing experience, and an escape from routine. Increasing leisure, urbanization, and incomes contribute to the rising demand for outdoor recreation. Rather simple, close-to-home activities are preferred, and need further development. Recreational demands exceed supply, and damage to recreational resources is occurring. Wilderness activities appeal strongly to youth. Urban youth could benefit from exposure to a wider range of recreational alternatives.

More educational effort is needed to teach participants to appreciate natural features, recognize the problems their recreation creates for others and for the environment, and to develop the skills and attitudes necessary to enjoy the outdoors.

Leadership Training and Related Materials

Teachers of the future are being trained in conservation and environmental education in preparatory courses in Minnesota colleges and universities, according to Miles (1971). His study contradicts the assumption of neglect of conservation education in college preparatory work.

A survey of 750 elementary and secondary educators in Minnesota showed that these teachers and administrators are more aware, better prepared, and are teaching more conservation than expected (pp. 219-220). These teachers and administrators thought that more environmental or conservation education could be integrated into other subjects, and that more teachers, if encouraged, would include more environmental education.

A survey of 41 colleges and universities in the state revealed that all Minnesota colleges and universities have optional courses in environmental and conservation education; that the increase in enrollment in these courses recently was slight; and educators thought new courses being developed should be required.

Although the Minnesota educational programs are better than had been anticipated, it is difficult to know whether this is true of other states. As indicated earlier in this report, interest in natural and environmental studies has grown rapidly in California (Gilliam, 1971). One would expect that many other states will report a rapid increase in such courses, but the outdoor education literature indicates few studies of educational programs in other states.

The purpose of a nine-year comparative study of the status of conservation education in the public schools of New York was to discover and interpret trends in elementary teachers' philosophy, methodology, pre-service and in-service education, and the use of materials in conservation education (Kenyon, 1965). Kenyon concluded that there was need for increased conservation teaching in elementary and secondary schools, pre-service and in-service training for teachers, and handbooks and other materials. Kenyon's study infers that the teachers do not know conservation concepts and principles.

Little research into the quality of educational experiences in outdoor, conservation, and environmental education has been conducted. One study, however, revealed that staff members of school camps in Michigan and Ohio were not well prepared in conservation education, spent relatively little time on such concerns, and failed to make effective use of the outdoors (Howenstine, 1958).

Such conclusions, if warranted, should be considered in educational attempts to improve the understanding of youth for environmental quality. The increased concern for accountability in education is a stimulant for careful planning, conducting, and assessing outdoor programs.

Evaluation of conservation workshops for in-service teachers showed that the attitudes of participants were closer to the environmentalist's point of view (as expressed by Sierra Club values) than were those of nonparticipants (White, 1973). Teachers who gained most from the workshops were interested in environmental problems but relatively uninformed. Teachers who attended the workshops also made greater use of the outdoors as a teaching device than did non-participating teachers.

The leisure-time physical activities of teachers -- those they participate in and those they would like to participate in -- were compared by Keith (1962). The top ten on the participation list were walking, cookouts, swimming, social dancing, exercises at home, bowling, table tennis, hiking, fishing, and basketball. The top ten activities teachers would like to engage in were sailing, skiing, water skiing, boating, canoeing, skin or scuba diving, golf, ice skating, horseback riding, and camping. Lack of skill, facilities, and money, in that order, were the reasons why teachers did not participate in their "desired" activities.

According to the study, teachers desired to engage in active, outdoor experiences that made greater use of water resources. Courses to develop recreational skills would be popular with teachers who wish to meet their needs for physical activity through outdoor experiences. Teachers with better developed recreational interests and skills are more likely to see the value of such experiences for children.

Many professional interests in outdoor education have been coordinated on the national level by the outdoor education project of the American Association for Health, Physical Education and Recreation (Smith, et. al., 1963). The project interprets the scope and meaning of outdoor education programs to schools, colleges, communities, and youth-serving

agencies. It develops instructional materials for such programs, and workshops and clinics for administrators of schools, colleges, and government agencies. In a five-year period, over 10,000 administrators have participated in such workshops. An annual national workshop is held at Higgins Lake, Michigan.

Federal and state agencies with conservation and environmental responsibilities often publish free or inexpensive materials for use in school programs. Examination of these materials revealed that most of them emphasized basic resource problems, such as plant and animal preservation, and seldom addressed new problems, such as air pollution (Johnson, C., 1966). These materials also concentrated on scientific aspects of problems, ignored social implications, and seldom focused on community problems or role of the individual in solving them. The reading level (eleventh grade) of the materials made them ill-suited for general use in public schools.

An updated version of the Johnson study might show that governmental publications have closed the gap between the emergence of new problems and the production of current literature, but the quality of the materials and their appropriateness for school use might still be subject to valid criticism.

A National Park Service program, National Environmental Education Development (NEED), has prepared materials which help young citizens understand the importance of restoring and maintaining the balance between the natural and man-made worlds. These materials guide young people from simple understanding and appreciation of the natural environment through a recognition of man's interference with the natural environment to environmental management and planning.

Since the effectiveness of the NEED materials has yet to be evaluated, their impact is not known. But the ultimate responsibility for curriculum development and teaching still rests with local school systems, and such materials stimulate new directions in outdoor education and the pursuit of environmental quality.

The Youth Conservation Corps, sponsored by the U.S. Departments of Interior and Agriculture, used outdoor experiences to stimulate the environmental learning of selected participants (Scott, Driver and Marans, 1973). The program involved about 3,400 high school students in outdoor

education, environmental studies, and work projects in the summer of 1971. Its program format and evaluative studies should help to assess the effectiveness of such programs in achieving environmental understanding and attitude changes.

The impact of the publications and action programs of a state committee on conservation education was the subject of a Michigan study (Wilson, 1967). For the guides to be effective, Wilson stated it was necessary to orient teachers in their use, and that the guides should be updated to include air pollution, beautification, and other environmental topics. It was also determined that administrative support, consultant help, and in-service orientation relate significantly to increased teaching of conservation.

The state has an emerging and potential role of leadership in environmental education (Hildebrand, 1972). Local educational leaders need state assistance in developing strategies to secure local support of environmental programs. The growing demand for assistance is not being met, as there are few funds or staff positions on the state level.

Summary

Teacher education programs exist, but their current state of development is not fulfilling needs adequately. Additional courses and workshops with current environmental concerns appear necessary. Such studies include capitalize on the increased interest of teachers in outdoor recreation for themselves.

The quality of present programs needs continued improvement. Curriculum guides and related educational materials for student use should include current concerns. To be used effectively, such materials are best introduced to teachers in organized sessions.

Federal, state, and local agencies and professional organizations are active supporters of outdoor and environmental programs. Increased activity on the part of state governments is essential to the pursuit of environmental quality.

Community Involvement

A major problem in the search for environmental improvement is building sufficient social agreement on which to base corrective action.

In our society, value diversity is a worthwhile goal in itself, and people arrive at similar values from dissimilar learnings. So it is consistent with the goals of a pluralistic society and the nature of human beings that efforts for environmental reform take different approaches.

The direct approach, as advocated by Dr. William B. Stapp of the University of Michigan, emphasizes direct involvement of students and community members in social-political actions for environmental improvement (Stapp et. al., 1970: pp. 35, 38). Activities focus the attention of students and the community directly on specific environmental issues.

The indirect approach, as advocated by Dr. Julian Smith of Michigan State University, stresses development of recreational interests in the outdoors so that students and adults come to support environmental reforms through personal experience (Smith, 1973). According to Dr. Smith, "Those who learn to love, enjoy, and appreciate the outdoor world will do the most to preserve those things that make their lives richer and happier [pp. 1-2]." Experience and theory suggest that both approaches offer viable patterns to interest people in environmental quality and action necessary to achieve that quality.

Administrators, teachers, students, and citizens of the community should be involved in developing and implementing programs in outdoor and environmental education (Stapp et. al., 1970, and Wehrling, 1973: pp. 11-13). School personnel have the obvious responsibility of curriculum development, but student involvement needs more than a token gesture. Since the ultimate goal of every school program is its impact on children, their needs and ideas should be determined. Community involvement is also a vital aspect of program development and implementation, since school programs depend on community support.

Involvement can begin with the formation of a committee, whose responsibilities would include identifying and becoming familiar with educational materials and community resources; developing a philosophy of the program, materials, and school sites; providing for teacher and community education and training; and administering and evaluating the program. Involved administrators, teachers, students, and citizens can develop a sense of identity with the program and a better understanding of environmental concerns and their ecological and social-political aspects.

At a time when other cities were experiencing several riots a year, none occurred in a city where citizens were involved in planning a summer recreational program for inner city residents (Bourgeoise, 1969). Residents of neighborhoods were asked to participate in planning, planting trees, and soliciting funds for the development of parks and programs. The author feels that "grass roots" recreational planning is necessary to bring citizens into decision making (pp. 23-24).

Adult Outdoor Education

A survey of outdoor education literature revealed very few studies in the area of adult education. The paucity of literature may indicate that little is being done, but it seems more likely that practitioners have not documented their involvement.

Selected factors thought to affect adult participation in educational activities and voluntary formal organizations were identified and described (Douglas, 1965). Some findings hold implications for outdoor and environmental education. Females who were aware of problems within the community and thought that they could bring about changes sought adult education programs. Males tended to be more active in voluntary formal organizations. Males and females who served in youth leadership roles were more likely to participate in educational activities. The more formal schooling an adult had, the more likely he was to participate in educational activities.

Therefore, educational attempts to utilize the outdoors to increase adult concern and actions for environmental quality usually draw students who are better educated, already aware of community problems, and serving in youth leadership roles.

Traits of daytime, non-credit participants in continuing education were identified (Dow, 1965). The most important influence on participation was the course content. One of the favorite uses of leisure time by this group was the appreciation of nature. Given their motivation, it might be possible to capitalize on the students' interest in nature, and design courses based on outdoor experiences.

An adult program of outdoor and environmental education was approached by the compilation of a manual designed for group use (Sharron, 1972). The author surveyed numerous sources and based his selections on

readability, accuracy and consistency, author's reputation, and timeliness. Sources were then placed in these categories: an ecological overview, overpopulation, air pollution, water pollution, effects of pesticides and chemicals, nuclear hazards, disposal of solid wastes, abuse of natural resources, excessive noise, and citizen action and education. From these sources, a set of readings was compiled for adult education and high school classes.

Summary. Community involvement is essential to the achievement of environmental quality through educational approaches. Both direct and indirect approaches are desirable. Since the literature about adult education programs is scarce, further development and written descriptions of such efforts are warranted. Adults who are better educated, already aware of community problems, serving in youth leadership roles, and interested in nature are the most likely prospects for enrollment.

DEVELOPMENT AND IMPLEMENTATION OF OUTDOOR EDUCATION PROGRAMS FOR ENVIRONMENTAL QUALITY

Outdoor education has a significant role in providing the impetus for changes, and opening new doors to practices and patterns in teaching and learning important to the functioning and effectiveness of schools (Miller, 1969).

Guidelines for Educational Innovations

It is helpful to view outdoor education programs with an increased emphasis on environmental quality within a context of educational and social innovation.

A Strategy of Change for Pursuing Environmental Quality

The chances of a school system's adopting an innovative educational program should be enhanced if the advocates have developed a strategy of change (Vogl, R., 1973: pp.38-44). Some writers feel that no viable theory of social change has been established, and advocate that a change agent develop his own strategy. In planned change, one assumes that people will adopt the change once they understand the benefits to them and society. The development of a viable relationship with the interests to be influenced is of great importance. Real needs would be diagnosed, relevant information provided, and alternatives generated to permit the potential adopter or adopting units a range of choices. Eventually, the innovation would gain acceptance and efforts would be made to stabilize it.

Within the general format of planned change, three major action approaches are identified. In the rational-empirical approach, individuals follow their own rational self-interests, which are supported by social-cultural norms. It is essentially an optimistic view of man, and ignorance and superstition are seen as man's chief foes. Education, then, becomes a force to free men of these inimical qualities. The biggest drawback in the rational-empirical approach is that information is useful to people only when they are receptive to it. Rational-empirical approaches also offer little explanation about how to create readiness in resistant individuals. Man also responds to changes in attitudes, values, and skills.

A second model for change is the power-coercive approach, which often takes the form of massing political, economic, and moral power behind the goals of a particular change. Laws can be passed, such as the Environmental Education Act, to secure funds for schools willing to implement such programs. Arousing guilt and shame in those who do not conform to the new expectations might help to secure their compliance. Threats can be made and subsequently fulfilled to demoralize the opposition and bring about the desired change. A major problem in this approach is that opponents can mass counter movements to defend the current status.

Normative-re-educative approaches assume that individuals and groups are guided by a normative culture from which they draw personal, internalized meanings. Change strategies would focus on altering normative structures, institutionalized roles and relationships, and individual intellectual perceptions. The problem is not primarily informational, but changing of attitudes, values and norms. The most likely way to accomplish such changes is through the client system, in letting people work out their own changes.

All three approaches can be used by agents of social change, but the greatest effort should be given to normative-re-educative approaches. These approaches often involve teachers and students in questions of values. Choosing, prizing, and acting are three important elements in the processes of value clarification designed by Raths, Harmin, and Simon.

When assisting youth in developing values more consistent with environmental quality concerns, it is important to provide choices. Without choices, students would be implementing the values of the instructors. Through value clarification processes, youth would examine alternative solutions to environmental problems and reflect on the consequences and values in various courses of action. They would be encouraged to consider what they cherish or value, to affirm their choices publicly, and to live in agreement with their choices.

Where conflict exists, it might be possible to work through the differences in open discussion. Trust between people of differing views can increase the likelihood of change. If both parties to the conflict can gain by its being resolved, it is more likely that an agreement will be reached. If both parties refrain from harming each other, it is more likely that change will take place.

Essentially, the goal of environmental quality is to have society adopt policies and practices less damaging to our environment. But the society at large cannot change unless the individuals within it change. The question then becomes one of how individuals gain new motives. A theoretical framework for the acquisition of motives, modified from that presented by Bennis, Benne, and Chin in The Planning of Change, should serve as a possible guide to enlist the support of teachers and students for environmental improvements:

> Provide situations in which the learner gains confidence that environmental improvements are important and can occur; develops a conceptual framework, justifying need for reforms; has an opportunity to explore for himself; links what is to be learned to everyday events; sees his achievements as improvements in his self-image and his society; and guides his quest for environmental improvements.
>
> Provide situations which illustrate the reality of environmental problems and their solutions; which encourage the formation of small groups to sustain the value changes sought; and in which concrete environmental improvements are realized and recorded as evidence of accomplishment.
>
> Provide extended experiences in natural settings to emphasize one's own personal relationship to such environments, and work with those parts of the social system which desire to change, thus increasing the likelihood of acceptance.

In other words, provide individuals with new situations to which they can adjust. These situational adjustments are important in motivating individuals to take on the new characteristics required by the situations. A person turns himself into the kind of person the situation requires. These institutional changes provide new situations for participants, who in turn develop new patterns of belief and action.

Planned change implies that the change sought is desirable and should be promoted. The promotion of such change involves value issues. In classroom situations, a common approach to questions of values is emotionally-detached discussion; thus, the commitment to a particular value is minimized.

This approach does not produce youth with the "emotional muscle" to make value choices from competing goals. It frequently manifests itself in risking either too little or too much for the gains being sought. Ideally, the school should create students who are willing to take moderate risks, increase tensions somewhat, and develop the capacity to stand the tension generated. Without the "emotional muscle" and willingness to take risks, students are being poorly prepared to deal with the problems facing society.

If youth are to gain in their ability to make choices among competing values, their educational experiences should include such opportunities. They would be encouraged to diagnose their own situations, define problems, and work for their solution. The teacher's role would become increasingly one of helping youth gain meaning from their own experiences and directing them toward problems worthy of pursuit. Without the opportunity to solve problems on their own, students remain highly dependent upon authority figures and their definitions of the problems and possible solutions. Teachers could also assist students in understanding the meaning of resistance to change, which can be interpreted as providing stability to individuals and groups. And, of course, it is always possible to lower one's expectations and still achieve improvements.

Implementing an Innovative Education Program

Important in the implementation of any innovative education program are the superintendent's willingness to mobilize resources; the securing, organizing, and preparing of staff; the development of professional, school board, and community support; the relationship to the existing curriculum; transportation; and liability considerations.

Program leadership should be provided by existing staff and course offerings, or by part or full-time personnel. If the staff are not prepared, they still might be selected to grow with the program's development. If outside staff are sought, it is essential to orient them to the values and professional expectations of the school and the community. Preparation of other staff members should also be considered. Some staff are motivated to learn new skills, but others expect compensations, such as monetary incentives or a re-allocation of time responsibilities within the school day. A framework of professional roles and expectations must be developed for teachers, program leaders, and administrative staff.

Resources are needed to operate the program. Internal budgetary and manpower shifts might prove feasible if appropriate slack resources exist or other program reductions are possible. External resources might be sought through increases in the school budget or by securing grants from outside sources. Office space, program materials, and equipment needs should be determined and secured. The availability of resources, the degree of program development possible, and community acceptance will affect the rate of development and implementation.

To secure broadly-based support for the program, it must be justified to school board, community, school personnel, and students. A rationale, with concommitant objectives, actions, and evaluative procedures would need to be organized and presented. A strategy to convince others of the need for the program would have to be developed.

In some situations, minority views can serve as an effective, but perhaps tenuous, basis for a program. A particular teacher or principal with concerns for environmental quality might be successful without the formal organization of this suggested program. By forming coalitions with influential community people, it becomes possible to implement citizen action roles without the official sanction of the school board.

But if the goals of innovative education programs are to be realized, a broader approach appears necessary. A committee could serve as an important link between the program and the majority attitude of the community. Schools thrive in a public mood which understands and accepts the role of the school. It is particularly important to avoid actions not widely supported in the community or to reduce the adverse effects of actions resented by the community. Widespread community complaints regarding such a program would lessen support and affect the entire school program. In a sense, the committee would serve as an interpreter of community attitudes and a legitimizer for the program.

The innovative program might be viewed as a starting point for reorganizing the school curriculum, but experience suggests that linking it to the existing curriculum and introducing minor changes would be more successful. Reassessment of time allocations would be crucial to the program's success on the high school level. Community explorations require more than a standard 50-minute block of time. On occasions, two-three hours might be required, as well as afternoon or evening periods. Varied transportation -- walking, biking, public conveyances, car pools of teacher or student drivers, and school buses (with or without student fees) -- might be needed. Different transportation patterns and citizen action roles suggest the need to solve legal concerns and liability issues.

Integration of Environmental Quality Goals into the Curriculum

Environmental studies often attempt to use an integrated approach. While it has advantages, some educators believe that it is not always

necessary or sensible. It appears that more thought and analysis should be given to integrated approaches.

Recommendations for integrating environmental quality studies into the curriculum indicate that by beginning with a set of behavioral objectives for each subject area, the relation of each to environmental education becomes evident (Halnen, 1971: pp. 3-15). Typical behavioral objectives for social studies may include identifying recreational facilities, pollution sources, and pollution controls; understanding the use of maps; writing letters to government representatives regarding ecology; and taking part in community clean-up campaigns.

Science objectives may include identifying, describing, and classifying natural elements, relationships, and cycles; the human care of natural and man-made systems and human impacts on the environment, such as erosion; making environmental tests, such as water quality tests; recognizing the value of natural resources; and understanding standards for fresh water supplies. Math may stress taking outdoor measurements, computing the costs of camping supplies and food, and calculating soil runoff in a stream or probable future population sizes.

Language objectives would include taking notes, telling stories, reporting on trips, and writing letters to government representatives about environmental issues. Physical education would emphasize participation in outdoor activities and games, using first aid, and collecting and recycling trash. Music would stress understanding and appreciating sounds of nature, environmental songs, and folk music, and making instruments out of scrap.

A supplementary list of behavioral objectives designed for the study of cities includes identifying causes of pollution and the sources of electrical power, taking environmental measurements and monitoring the environment, and describing and explaining the reasons for different types of construction.

Summary

Outdoor education for environmental quality can be considered an innovation. A strategy of change is necessary, and normative-re-educative approaches seem most consistent with democracy. A theoretical framework should guide development of a program, and support, leadership, and

resources are necessary for its success. Interdisciplinary, integrated approaches, linking environmental concerns to the existing school curriculum, appear most promising.

Guidelines for Outdoor Education

Ecology and Environmental Quality

An important content area in the quest for environmental quality is ecology. Since ecological studies rely on multiple disciplines, they can be integrated. The study of several separate ecosystems is a good way to develop an understanding of ecology (Vogl and Vogl, 1970: p. 4). Through such studies, basic ecological principles can be learned, observed firsthand, and reinforced.

The major ecological concepts, according to Sharron, include living and non-living elements, major biotic zones, smaller communities with distinctive life forms; varied management strategies in different ecosystems, soils, micro-climates, vegetation, animal life, the relationships of native species to their environment, stabilizing the productivity of domesticated species, the understanding of living processes, evaluation, biochemistry, physiology, aesthetics, and recreational values (1972: pp. 28-29).

A discussion of basic ecological principles generally includes the concepts of ecosystem, carrying capacity, density, community, energy exchange, food web and chain, biological concentration, habitat, limiting factors, adaptation, interaction, homeostatis, succession, competition, dominance, mortality, climax community, and diversity (Vogl and Vogl, 1970: pp. 3-5).

Programs in Outdoor Education

Ecology. Ecology can be studied by following a set of general guidelines (Vogl and Vogl, 1970: pp. 6-9). The primary objectives are to learn to recognize natural systems, their structure and function, and to build a foundation for the understanding of environmental issues.

The first step in the study is to learn ecological principles and recognize examples of them. Recognition of the dependence of communities on their habitats and of the changes in communities as a result of changing habitats is essential.

Several natural communities should be studied to determine their structure and function. Changes due to human influence should be noted. Physical and chemical aspects of the environment should be tested and related living organisms and their characteristics observed. Many ecosystems --field, forest, pond, stream, ocean, lawn, playground, desert, vegetable garden, orchard, a rock, or a crack in a sidewalk -- can be studied by using this basic format.

Environmental Management. Several studies have been directed toward the concepts and understandings appropriate to an outdoor education program focused on environmental quality. One list of 477 conservation principles and concepts was grouped into general, soil, water, forest, grassland, mineral, wildlife, recreation, scenic, and human resources categories (Visher, 1960).

Concern that conservation education was non-urban oriented, while most population is urban, encouraged a study to determine understandings basic to urban environmental programs which should be included in an elementary curriculum (Ronfeld, 1969: p. 3). Understandings were categorized according to air, land use, man-made resources, water, and urban ecological problems (pp. 154-163).

Conservationists and educators considered all 104 understandings in the survey important. Of the total, 98 were regarded as basic to the study of the urban environment (p. 124).

A later study attempted to identify those concepts essential for environmental management education (Roth, 1969). Concepts were placed in these categories: environmental management, management technology, economics, environmental problems, environmental ecology, adaptation and evolution, natural resources, the socio-cultural environment, culture, politics, the family, and psychological aspects (p. 45). Of the 157 concepts listed, 111 were considered to be acceptable and applicable to all levels from kindergarten through 16th grade (pp. 37, 45).

Environmental concerns cannot be limited to local problems or to political boundaries. High environmental quality must be dealt with on regional bases. Concepts in a study of water quality in the Great Lakes region were categorized as ecological, economic, political, social, and technological (Vogl, S., 1973: p. 109).

One study classified conservation concepts according to grade level (Weiss, 1961: Appendix A). Aspects of major concept areas -- water, plants and animals, the earth, sound and communication and several minor areas -- were grouped for study by children in kindergarten-second, third-sixth grades.

In a three-week interdisciplinary study of environmental education, materials were developed to guide student study in population and food interactions, litter and solid waste problems, water and thermal pollution, air and noise pollution, and adaptations and relationships of the school grounds (Peden, 1972). This is a step toward the reorganization of concepts into more environmentally-focused categories.

Citizen Action Roles. In the quest for environmental quality, students are often encouraged to take individual and group action to improve their environment. A wide range of activities, from clean-up campaigns to monitoring and reporting on the release of pollutants, is recommended. Acceptance of such actions within a community will result from the interactions of individuals, norms of social and cultural groups, and the nature of the actions taken.

Student actions should be considered in terms of their social consequences, with thought to minimizing the adverse aspects of student involvements. Efforts should focus on making student actions compatible with community expectations, without sacrificing important environmental gains.

Discussions with appropriate officials within the school and the community would help to clarify what constitutes appropriate actions. By starting with student actions that have greatest community support, it should be possible to build a sufficient base of support to address environmental issues and actions initially less acceptable to the community.

In a survey of Illinois school superintendents, one-third of the contemplated student actions was acceptable to the administrators (Vogl, R., 1973). The question is not whether students should take action to improve the environment, but the appropriateness of their actions for the community in which they live.

A large number and variety of ecological and environmental management concepts can guide program development and provide the basis for k-12 programs. The big task is arranging the concepts in an orderly sequence,

according to the ability levels of students. Criteria to stratify concepts for subsequent study remain to be developed. Similarly, a wide range of student action roles can be envisioned and would require a system of stratifying the actions according to their appropriateness for various age levels.

Resident Outdoor Programs. A report was prepared to give guidance and direction to school district administrators and teachers in the planning and conduct of resident programs on outdoor education (Rosenstein and Donaldson, 1972). Initial planning involves the board of education, school administrators, teachers, students, parents, and the community (pp. 3-5). Teachers and students act as the planners of the program, determining what and why certain things should be included. After plans are made, teachers meet with administrators, who act as liaison between the school and the board, the parents, and the community. Approving and financing of the program are the responsibilities of the board of education. Community members can serve on a planning committee, which works with teachers and administrators. Students, in addition to initial planning, relate their experiences to the school, their parents, and the community by means of plays, reports, and displays.

Pre-program surveys of students can include evaluations of their attitudes and interests, social and recreational experiences, desire to attend camp, past experiences with field trips, knowledge and familiarity with nature, and their assumed gains and losses at camp. Post-program evaluations by students would ascertain what benefits the experience had for them, new interests developed as a result of camp experiences, what they felt were the best activities, and wishes for further related experiences (pp. 53-55). Post-program evaluations by teachers would stress the strong and weak aspects of the camp experience, the value of the experience for students, the most and least enjoyable aspects of camp, and their recommendations for the future (pp. 56-57). Parents would evaluate changes in their children as a result of camp, and the worth of the experience as expressed by their children (p.58).

The development of a camp program with an environmental focus as an alternative school was tested with 15 students from grades 10-12 (Paquin, 1973). They were selected from a group of volunteers and attended camp as

an alternative to the regular high school program. The major goal of this high school program at Yarmouth, Massachusetts are to improve student self-concept, to develop environmental literacy, and to train students to function in naturalist-like roles in an educational program for elementary pupils at the same camp.

Education majors from schools in the New England Consortium of Teachers Colleges also took part in the camp experience. They were expected to gain an understanding of the natural environment and interdisciplinary teaching strategies and techniques in the outdoors.

Outside agency funding will finance the first three years of the program, but the future funds are expected to come from broadly-based interests in the educational program. It is anticipated that supplying naturalists to other school programs, opening the site to other groups, conducting workshops for in-service teachers, and involving other schools of education will provide sufficient revenue to support the program.

Field Trips. Whatever the purposes of going outdoors or the length of the activity, planning and thinking about the experience should precede and follow it (Vogl, R., 1967). Prior to any outdoor activities, both teacher and students should prepare themselves. Teachers should be aware of the children's interests and abilities, determine the skills and concepts they expect to stress, and plan for mechanical concerns, such as permission, busing, clothing, facilities, costs, etc.

Students may be prepared for the experience by their teacher and themselves. They should be aware of what they should know prior to their trip; what they expect to learn and observe and what actions are appropriate during the trip; and how they will record and report their experiences.

During the trip itself, teachers should be aware of the effects which they and the experience are having on the students, the appropriateness of the experience to the students' abilities and interests, and whether the students are answering the questions they asked prior to the trip, seeing relationships, and gathering data for later problem solving.

Both teachers and students can evaluate the experience in terms of what they did, learned, and liked about the trip, and how they could plan best for another one. Spoken, written, pictorial, and symbolic interpretations, representations, and presentations of the experience can then be planned and completed.

Alternative Organizational Schemes. There are three alternative methods for organizing field trips for elementary grades (Knapp, 1970). The teacher-directed format includes primarily lectures. With a modified approach, teachers served as facilitators of learning. The student-oriented approach placed responsibility for planning and executing activities, and their success or failure, on the students themselves. Knapp cautioned that, although thismethod would be the most advantageous eventually, it must be introduced gradually. The student-oriented approach for outdoor education field trips is most consistent with democratic principles and offers the best opportunity for attaining the environmental goal of citizen involvement and action.

Site Development. Developing school sites can heighten the interest and understanding of the natural and man-made world for students, teachers, and community members and increase their motivation to improve the man-made world. It can also help to develop feelings of capability and belonging and a recognition that each person has the ability to help change the world for the better.

A school nature trail on which all school subjects were taught involved students, teachers, and citizen groups in its development (Abraham and Abraham, 1972). Students contacted the state department of conservation for wood chips, local citizens donated wood for birdhouses built by the shop classes, and teachers coordinated the activities. The success of the trail led to the recommendation that similar efforts would be worthwhile in other situations. Conservation education, they concluded, can even take place in the crack of a sidewalk.

In a similar project, a 14-acre wooded site was developed as a school outdoor laboratory (Lewis, 1969). Students participated from the earliest planning stages through development and maintenance of the site. Detailed maps were made, trails and wildlife habitats established, and outdoor lessons taught on ecological principles.

Simple, inexpensive projects can transform a school ground into an educational resource (Knapp, 1970). Activities such as planting trees and shrubs or building birdhouses and weather stations can be undertaken with minimal effort and expense. Air pollution-testing equipment has been made by the children in outdoor education classes. A "grass jungle" --

a place where the grass is simply allowed to grow naturally -- provides opportunity for students to observe natural changes in plants and in an area. Smell, touch, and taste have created awareness of the different senses that plants arouse.

EVALUATIVE STUDIES

The basic, underlying objective of outdoor education is change in students (Swan, 1969). But determining what type of change -- conceptual, attitudinal, or behavioral -- is desired; and how to measure it is difficult. Professional opinion is the most commonly-used tool.

Prerequisites to the full implementation of a program of conservation education throughout the country are the needs to know the students' present level of knowledge and their ability to apply this knowledge rationally to daily problems; to select concepts that assure the improvement of understanding and reasoning; to determine the best means of incorporating these concepts and principles into present curricula; and to realize that environmental understandings are imperative at all grade levels.

Objectives of Outdoor Education

Outdoor education should be viewed in the context of the needs of the society from which it originated (Smith et. al., 1963: p. 4). An urbanized, automated, high-speed, yet sedentary society needs the outdoors to reacquaint its population with the world of nature and its peace and tranquility; to alleviate bordeom and the experiencing of only vicarious activities; to have an opportunity to recognize human roots in the earth; and to sense a reawakening to the real world outside (pp. 5-11).

A common thread runs through most definitions of outdoor education (Pick, 1972: p. 20). Those things which can be learned best in the classroom should be taught there, and those learned best in the outdoors should be taught there. Outdoor education is not a specific discipline, but a method involving direct contact with the outdoors.

Directors of the 10 major outdoor education centers in the United States were asked what they saw as the primary purpose of their programs (p. 53). Their responses included increasing environmental awareness; providing an environmental studies center; offering a new and vital awareness of man's relation to natural phenomena; serving the environmental needs of the college community, with emphasis on studies and activities related to the natural environment; developing awareness of human ecology; providing facilities for studying present and past natural

and man-made environments; providing for education, service, and research in outdoor education and camping; preparing teachers and administrators to use outdoor learning environments; and providing opportunities for environmental education, therapy, and recreation.

Objectives of outdoor education centers are numerous (p. 55). Most center directors listed use of the camps as training centers for outdoor and environmental education as a primary objective. The second most-frequently stated objective was to provide a setting for, and assist in the development of camping and outdoor education programs.

During the 1970-71 academic year, 841 persons were interviewed at the 10 major centers. College students used the centers most. Non-college use was primarily by school children and their teachers, youth agency children and their leaders, and conference and workshop participants.

Over 60 outdoor education leaders were asked which areas -- natural sciences, conservation, and group living -- were most important to outdoor education (Pulliam, 1963). Eighty-nine percent of the programs surveyed included nature study in their activities. Two basic objectives of the local programs studied were the appreciation of nature and science and the importance of conserving natural resources.

A tentative program developed from this study was presented for review to a jury of experts who recommended that programs should include, among other subjects, natural science, nature lore, and ecology. These recommendations were the basis of a curriculum guide for local county outdoor education programs, stressing: forest, grassland, soil, water, the beauty of nature, and wildlife conservation areas.

The Status of Outdoor Education in Relation to the Goals of Environmental Quality

Forty-eight schools were surveyed to determine the status of understanding and reasoning in conservation concepts by ninth-grade students (Dorsey, 1972). Results were compared according to urban, suburban, or rural locations, racial predominance, and sex. T-tests to analyze results of the Test of Reasoning in Conservation showed significant differences in groups (pp. 2-4). Urban and suburban scored higher than rural students, students of predominantly-white schools scored higher than students of predominantly-Black schools, and boys scored higher than girls.

Dorsey concluded that since differences did exist, adequate programs should be developed to account for these specific differences, and to provide an opportunity for increased emphasis on the economic, sociological, and human aspects of conservation. He recommended conservation education programs developed to meet the specific needs of prospective students, coupled with teacher orientation through pre-service and in-service workshops.

In a similar study, Glidden structured a 66-item objective test for seniors in 33 high schools in various locations in the United States (Dorsey, 1972: p. 21). He concluded that high school seniors are not adequately informed in conservation and recommended that the secondary school curriculum be modified to include more effective teaching.

A detailed study of extra-curricular activities at Dartmouth and Bowdoin Colleges and the career and methods of William G. Vinal was based on the assumption that extra-curricular activities could contribute an appreciation of the natural world and the need for conservation (Gustafson, 1954). The results showed that alumni, faculty, administrative personnel, and students approved of most activities offered by the two colleges. Nearly all Vinal's former students liked his techniques, and the primary criticism of the programs was the tendency to in-breeding.

This study led to recommendations for improving collegiate extra-curricular activities to contribute appreciation of nature and conservation. Gustafson concluded that a conservation conscience could be developed best through intimate contact with the outdoors, competent natural history instruction, and experiences with the relaxing and recreational qualities of outdoor living.

Kenyon reported on the status and nature of conservation education in the elementary schools of New York state over a nine-year period (1965). He found that concepts in the natural resource areas of soils, water, forests, wildlife, and minerals were presented in a variety of learning experiences. Direct responsibility for the program rested with school administrators and teachers, in cooperation with interested agencies and parties.

But conservation education had changed little during the nine years, Kenyon said. Teachers were still concerned with the need for more conservation education in elementary and secondary schools, handbooks of

experiences, activities and experiments, and programs of pre-service and in-service education. Out-of-school organizations, such as the scouts, offered students the greatest incentive for making the entire school population conservation conscious.

Early conservation education in outdoor education camps was not satisfactory (Howenstine, 1958). Although camp staff rated conservation as a high priority area, very little time was spent in the study of conservation, and the activities were of low quality. Howenstine recommended that camp staff be better prepared to teach conservation effectively in the outdoors.

Outdoor Education Compared to Indoor Education

The relative merits of outdoor and indoor education have been the subject of several studies. The effects of environmental activities carried out exclusively indoors were compared to those conducted outdoors (Howie, 1972). A comparison was also made between a program conducted both indoors and outdoors and the two previously-mentioned formats. The author called for a clearer understanding of the objectives of environmental education activities indoors and outdoors. He recommended that more time in the classroom and in outdoor settings be allowed for students to apply and anchor the concepts, ideas, and principles being developed.

An attempt was made to determine the differences, if any, in the learnings of eighth- and ninth-grade students in earth science as a result of being taught indoors or outdoors. (McNamara, 1971). McNamara designed a study in which one group used natural resources in the outdoor setting and the second group used prepared materials in an indoor laboratory. He based the study on Shea's observation that most earth science curriculum project materials had been prepared for indoor use in the classroom laboratory and that more emphasis was placed on abstractions than on correlating the concepts of earth science with direct involvement in the natural world.

Thirteen groups of ninth-grade and two groups of eighth-grade students took part in the study. Those taught indoors studied according to the ESCP curriculum; those taught outdoors took part in activities designed by the researcher to meet ESCP objectives. After a unit of study had been completed, results were measured by the ESCP Unit Achievement

Test 1, the Cornell Critical Thinking Test, and the McNamara Indoor-Outdoors Preference Appraisal. Differences between the indoor and outdoor groups on total content achievement in earth science were not significant; but significant differences in critical thinking and preference for outdoor experiences favored the outdoor group (pp. 87-88). This was especially true for low I.Q. students.

Although overall differences in earth science concepts were not important, the outdoor groups gained significantly in specific concepts about rocks, minerals, latitude and longitude, maps and contour models, and magnetic field. It was concluded that these concepts contain elements which the students in the outdoor groups could comprehend as an integral part of their learning environment, and that they would better be taught outdoors (p. 89).

Both McNamara's and Lansing's studies supported the outdoor approach to learnings in conservation and earth science, suggesting a definite trend in support of the outdoors as a learning laboratory (McNamara, 1971: p. 21). There was great interest in an approach that related learning to life outside the school, emphasized student involvement and higher levels of intellectual activity, and proved to be equal to or better than the indoor approach in developing favorable student attitudes and mastery of content.

An attempt to determine the effectiveness of alternative methods of teaching ecology revealed no significant differences between learnings of groups taught outdoors and those taught indoors (Bennett, 1963).

Summary

Generally, outdoor education was more successful than indoor education in developing selected concepts of environmental quality, according to the studies cited.

Attitude and Behavior Change and Outdoor Education

Many educators have studied changes in attitudes and behavior as a result of camping, field, and personal outdoor experiences. Chrouser explored a common assumption that the outdoors, if properly utilized as a laboratory, may result in a certain zest for learning (1970). He pointed out that industrialization, urbanization, and the lack of insight into the

wise use of natural resources had resulted in human survival problems; and that there is a great need to teach understanding of the environment and man's relationship to it.

His tests showed that the group which experienced outdoor exercises and laboratory activities had significantly higher understanding of interactions of science and technology, society and the social responsibility of scientists, and a better grasp of biological principles.

The conservation attitudes of elementary school teachers-in-training were compared to those of specialists in conservation (Sherman, 1950). More experience in teaching, more college semester hours, or more semester hours of science courses increased conservation information and attitude agreement with conservationists. Of all the college courses with potential conservation content, only conservation courses per se appeared to produce more conservation information or higher attitude agreement with conservation specialists.

As a Result of School Camping

Data were collected from experimental and control groups of 50 sixth-grade students to determine the effects of camp experience and compare the educational results of the program with the objectives (Cragg, 1953). Evaluative techniques were based on "Guess Who" responses, sociograms, interviews, rating scales, checklists, questionnaires, wire recordings, and satisfaction-dissatisfaction responses. The results: one-week school camp experiences met some of the program's objectives, children were generally enthusiastic about the experience, and students at camp showed greater intellectual improvement than those who remained in the classroom.

Comparison of two different camp curricula revealed that camp served as a human relations laboratory where self-acceptance and self-realization increased within a democratic context (Davidson, 1965: pp. 1,5). Davidson found that self-concept affected an individual's interactions with others and that the child sees himself in many ways according to the situation in which he finds himself (pp. 33-34).

One format for the camp experience was structured by adults, while campers were involved in planning the other. In both situations, children gained in measures of self-concept (p. 85). School camping provided

avenues toward social acceptance, or at least interpersonal relations among peers, and decreased social distance between high and low status children (p. 115). Positive change was in harmony with the values of a democratic society. However, many good social relationships established in the camp setting deteriorated after the students returned to school (p. 100). This may have been due to the short duration (eight days) of the camp experience. Davidson concluded that school camp does produce positive changes in self-concept and social relationships of elementary school children (p. 119).

Program evaluation was the weakest area of a camping program, according to a study to develop and measure change in children as a result of a school camping experience (Johnson, T., 1957: p. 1). The author identified objectives of school camping as learning to work with a group in specific conservation projects; developing social traits and elements of democratic living through observation and daily practice; and having experiences leading to an understanding of one's environment, awareness and appreciation of nature, and understanding of human and natural resources and self-responsibility for their wise use (pp. 43-44).

Measurements indicated that semi-objective methods for appraising the educational outcome of school camping have limited usefulness in identifying changes in pupil achievement, interest, behavior, and social status during one week of public school camping experience (p. 73). Johnson found that, although a one-week school camping experience did not increase the acceptance of individuals, it appeared to be successful in improving group cohesiveness.

Both professional and non-professional group leaders can be effective facilitators of positive self-concept changes in seventh- and eighth-grade participants in a camping situation (Marks, 1971).

During the summer of 1972, over 3,400 young people attended 97 Youth Conservation Corps camps, operated by the U.S. Departments of Agriculture and Interior (Scott, Driver, and Marans, 1973). Students ranging from 14-19 in grades 7-12 were selected to come and screened for compatibility with the agencies; purposes. Camp objectives were environmental learnings, work accomplishments, and social and personal development. Environmental learnings were emphasized because evaluation of the 1971 program indicated the least gains in this area.

Highlights from the program evaluation are important. The social life of camp had immense potential for learning attitudes and practicing life styles consistent with ecological principles. Satisfaction with the program was greater for white than minority corps members; for middle and higher income groups; and for those with prior camping experience (pp. 150–151). Students considered most worthwhile a chance to meet people and make friends, learning ecological and conservation principles, identifying and observing natural life, living and working outdoors in a natural setting, physical activity and keeping in shape, seeing new places, and learning to get along with people from different social backgrounds. Students rated work programs high in terms of the amout and quality of work performed and its public benefits.

The gain in knowledge of environmental matters was equivalent to the gains during one year of school (p. 153). The authors indicated need for administrative practices to rank environmental learning objectives equal to other goals of the program. For such goals to be realized, specific learning goals for environmental quality must be developed (p. 158). The importance of off-duty, informal aspects of camp life helped to develop ecologically-sound lifestyles.

Summary. Strong emphasis on environmental awareness is an objective of outdoor education programs. It is recognized that programs will have to be adjusted to the various needs of students. Conservation values are best taught through intimate contact with nature, competent natural history instruction, and recreational experiences in the outdoors. More conservation education is needed at all grade levels. Handbooks of experiences, activities, and experiments are desired by teachers. Increased program quality will come from increased teacher preparation.

As a Result of Other Activities

College students exposed to three weeks of outdoor experiences in the Virgin Islands thought their experiences had helped to establish lifelong interests in the natural sciences (Loret, 1969).

To determine the impact of a conservation education program, attitudes of residents toward conservation, knowledge of conservation, and receptiveness to conservation clubs and organizations in two cities

were measured by questionnaires (Solid, 1971). The community with a conservation education program in its junior high school exhibited more favorable attitudes and knowledge of conservation than did the community without a program. Though differences existed at all levels, they were greatest with senior high students. Solid found that better educated, professional, urban people were generally more favorable toward conservation.

A survey of high school and college students and adults revealed that age, maturity, and education have major roles in the development of conservation attitudes, as these factors are associated with conservation experiences (George, 1966). George concluded that involvement in nature camps, conservation clubs, and similar outdoor activities has a positive impact on conservation attitudes.

Behavior is influenced by attitudes toward a concept, and if attitudes are known, behavior can be predicted (Chase, 1969). On the basis of this assumption, Chase sought to identify changes in attitudes of school administrators and teachers toward the usefulness of outdoor education in achieving academic goals. He developed pre-tests and post-tests to measure attitudes toward outdoor education and population characteristics. They were administered to a group of teachers and administrators in an E.S.E.A. Title III Outdoor Education Project which he directed.

He found significant differences between the before-and-after attitudes of participants, with less-experienced teachers exhibiting the greatest changes. He concluded that participation in such a project was effective in changing educators' attitudes toward outdoor education.

Participation in planning sessions changed attitudes toward environmental problems and lifestyles of elementary education students in an instructional program in environmental issues (Lyons, 1971). Three preservice elementary teachers participated in six planning sessions for a course in environmental problems. Each student then taught one lesson on a selected environmental topic. It was concluded that participation in a positively-oriented environmental program was effective in maintaining or producing positive attitudes toward selected environmental issues.

An attempt was made to analyze the effect of involvement in a community service project on college students' attitudes toward themselves peer groups, community, social change, and teaching-learning experiences

outside class (Aronstein, 1972). Aronstein assumed that a community service project would span the gap between "book learning" and first-hand experiences by giving students the opportunity to solve real problems in the real world. He thought it was possible to blend academic discipline with a community service project. The nearly-universal appeal of the environmental crisis influenced choice of an environment project.

Participants were separated into optional and required study groups. Students in one section of an environmental studies course worked as part of their course requirements; in another section, they were given the option to work or not; those in an independent studies course were recruited to participate for credit; and several students volunteered to work without credit or pay. Students in the independent study course gave the most time to the project, while non-credit, non-pay volunteers gave the least.

Aronstein's data indicated that students perceived positive overall attitudinal changes in themselves in relation to initiative and self-direction, becoming more critical thinkers and practical problem solvers, developing insights into environmental problems, exercising leadership, feeling self-satisfaction, and developing more meaningful social relationships (p. 113).

Definitive attitudinal changes toward their peer groups could not be found, although attitudes toward their group and their functioning in a democratic manner was positively skewed. But students did experience positive attitudinal changes toward the community in which they worked and toward the leaders of that community when exposure to the community was not limited. They grew to prefer outside teaching-learning experiences in community service projects. The project reinforced optimism toward social change in those students who were already optimistic.

The effectiveness of outdoor experiences was compared to media presentations in developing concepts in environmental education (Brady, 1972). No significant differences were found between the two approaches. Author Brady suggests that both field trips and media presentations be included in such programs.

Summary. The studies cited indicate that attitudes and behavior toward environmental quality can be changed positively by outdoor education

experiences. Involvement in camps, clubs, and similar outdoor activities has a positive impact on attitudes toward the environment.

The Status of Research in Outdoor Education

Research in outdoor education has not been sufficient and the scope is limited (Donaldson, 1972). Generally, research in the field has centered on those subjects easiest to grasp -- administration and school camping -- and no authoritative statements on research priorities have been made. The Council on Outdoor Education and Camping formed an active research committee in 1964, but the committee has made little effort to communicate with the educational community. Its major activity has been an annual report. There is a need for aggressive, rational, coordinated research efforts.

At present, research in outdoor education is usually done by graduate students, who focus on the discrete, easily-studied areas of administration and school camping. Outdoor educators are often action people with little inclination toward research. Little or no value is placed on research or writing in schools; if experimenting takes place, it is reported locally, if at all.

Outdoor education has been an organized movement for 30 years, but few historical studies have been made. Such studies, done now, could be complete and analytical, since most of the movement's leaders are still living and have excellent memories. Research could also provide information on the recent shift in emphasis toward environmental concerns.

Philosophical studies in the field are limited. A shift from the "holistic approach" toward the academic has taken place. The reason is not clearly known. Additional studies regarding the philosophical foundations of outdoor education would be helpful.

Questions of content are often dismissed with the Sharp dictum, "that which can best be learned in the out-of-doors through direct experience, dealing with native materials and life situations, should there be learned (Donaldson, 1972: p. 9)." Donaldson feels that more research is needed on the appropriate content for outdoor education experiences.

Usually, only local efforts are directed toward curriculum studies. One such three-year study of the curriculum of a single school produced a Title III report, That Which Can Best Be Taught. Broadly-conceived and

geographically-scattered curriculum studies are needed to put outdoor education in the mainstream of education and the environmental role should be given priority. Some evaluative studies compare methods of outdoor education with the traditional methodology of the classroom, laboratory, and library, but additional studies are warranted.

The recent trend away from resident programs toward increasing non-resident experiences has not been accompanied by a corresponding increase in research, Donaldson points out. Few institutions of higher education offer what they label outdoor education, although they engage in field ecology, camp counseling, and field geology. Two studies to examine the factors most influential in teachers' use of the outdoors for educational purposes contradict each other.

Although more research has been done in administration than in other areas, it is recommended that additional studies be made in administration, emphasizing the legal base of outdoor education, finances, and ideal facilities. Donaldson urges that research be undertaken in these categories:

Empirical studies of exemplary design applied to large populations;

Studies which distinguish between cognitive and affective domains;

Studies of the interests and attitudes of learners; individual growth, especially self-concept; the nature of learning in non-resident programs; the unique needs of inner-city youth in outdoor education; and

Evaluative studies of federally-funded programs.

RECOMMENDATIONS

Outdoor education is an important means of implementing the goals of environmental quality. Through outdoor experiences, people learn to appreciate and understand the natural world, the impact of human influence on that world, and how to limit the adverse effect of human influence.

There is need to re-examine the uses of rural and urban settings for outdoor education; to develop new directions for recreational uses of the outdoors and better approaches to stimulate citizen interest; to conduct research on effective teaching and evaluative techniques and on the effects of outdoor education on environmental quality; and to develop and implement programs in outdoor education at all levels, from kindergarten through adult.

Specific recommendations for future directions in outdoor education include:

Studies by states on the status of outdoor and environmental education within their boundaries;

An intensive study of urban problems -- their goals, program content, teaching techniques, evaluative measures, and extent;

A study of the status of outdoor recreation within outdoor education programs -- time devoted to activities, attitudes of students and staff toward recreation, skills taught, and equipment;

A detailed study of the 10 major outdoor education centers in the United States to determine program content and teaching techniques;

A documentation of the varied educational approaches to achieve environmental quality through outdoor experiences and an assessment of the effectiveness of the approaches;

An assessment of the use of naturalists and interpreters in school outdoor education programs;

A survey of the strengths and weaknesses of interpretive services to learn how they might be improved;

Evaluative studies of environmental education models and materials being developed by elementary and high schools, colleges and universities, industries, and state and federal governments;

A synthesis of ecological concepts into manageable categories, with guidelines for use at various age levels;

Adaptation of known environmental concepts to outdoor situations for students of various age levels;

The development of materials to illustrate a wide range of choices available to teachers for directing students in the outdoors;

Materials to assist schools in the development of guidelines for outdoor education programs, focusing on citizen-action roles;

Guidelines for the development of outdoor adventure education;

Expanded programs and more reporting of adult and early childhood outdoor and environmental education; and

The re-designing of earlier studies to assess environmental rather than conservation aspects of programs:

Howenstine's evaluation of the quantity and quality of conservation education in outdoor education programs;

George's study, showing the importance of clubs and informal groups on the acceptance of conservation values by youth; and

Scott's study of the Youth Conservation Corps, and the impact on environmental quality of attitudes, learnings, and lifestyles acquired in work-camp experiences.

Conclusions

Outdoor education has met many needs of conservation education in the past and will continue to meet the needs of environmental education in the future. Outdoor education programs sought environmental goals long before "environmental education" became popular. The outdoor education movement has a history of presenting the relationship between environmental and humanity, and will continue to play a major role in alerting citizens to environmental problems.

It is anticipated that outdoor education will also continue its traditional concern for the wide variety of ways in which people can learn to enjoy and appreciate the outdoors. But a changing world requires continually-updated educational programs. Therefore, it is recommended that outdoor educators re-examine their goals, objectives, and practices to determine whether their educational programs are meeting the environmental needs of the 1970's.

REFERENCES

Abraham, George, and Katy Abraham. "Green Thumb Tricks -- A School Nature Trail." Instructor, LXXXI, 7 (March, 1972), 80.

Aronstein, Laurence William. "A Study of Attitudinal Change in College Students as a Result of Constructive Participation in an Environmental Community Service Project." Ed.D. dissertation, Buffalo: State University of New York at Buffalo, 1972.

Bennett, Lloyd Morris. "A Study of the Comparison of Two Instructional Methods, the Field Method and the Classroom Method, Involving Science Content in Ecology for the Seventh Grade." Ph.D. dissertation, Tallahassee: Floriday State University, 1963.

Blackman, Charles A. "Perspective: A Curriculum Specialist Looks at Outdoor Education." Journal of Outdoor Education, III, 3 (Spring, 1969), 3-5.

Blough, Glen O. "Science and Outdoor Education, or 'Nobody Can Really Know How I Feel'." Journal of Outdoor Education, I (Spring, 1966), 8-14.

Bourgeois, A. Donald. "Recreation and the Inner City Crisis." Journal of Health, Physical Education and Recreation, XL, 6 (June, 1969), 20-24.

Boutwell, William T. "Our Leisure-Time Education." Education Digest, XXXV, 4 (December, 1969), 25-27.

Brady, Eugene Ralph. "The Effectiveness of Field Trips Compared to Media in Teaching Selected Environmental Concepts." Ph.D. dissertation, Cedar Falls: Iowa State University, 1972.

Campbell, Frederick, John C. Hendee, and Roger Clark. "Law and Order in Public Parks." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 137-144.

Carlson, Reynold E. "Perspective: A Recreation Educator Looks at Outdoor Education." Journal of Outdoor Education, II, 2 (Winter, 1968), 13-14.

Carthy, J. D. "The Field Studies Council (England)." Journal of Outdoor Education, IV, 3 (Spring, 1970), 15-18.

Chase, Craig Carleton. "Changes in Attitude Toward Outdoor Education By Teachers and Administrators after Participation in the Cooperative Outdoor Education Project, Title III, E.S.E.A." Ph.D. dissertation, Carbondale: Southern Illinois University, 1969. (ED 049 031 122 pp.)

Chrouser, William Harvey. "A Comparison of the Use of Outdoor Vs. Indoor Laboratory Techniques in Teaching Biology to Prospective Elementary Teachers." Ed.D. dissertation, Greeley: University of Northern Colorado, 1970.

Clawson, Marion. "State Parks . . . Vital to the Times." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 63-66.

Clawson, Marion. "The Emerging American Life Style, Parts I and II." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 19-20.

Consumer and Recreation, The. Albany: New York State Education Department, Bureau of Secondary Curriculum Development, 1972. (ED 064 632 54 pp.)

Crafts, Edward C. "Leisure and Outdoor Recreation." In C. R. Jensen and C. T. Thorstensen, eds." Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 13-14.

Cragg, Nadine Anna. "An Evaluation of the Year-Around School Camp of Long Beach, California." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1953.

Davidson, Morris. "Changes in Self-Concepts and Sociometric Status of Fifth and Sixth Grade Children as a Result of Two Different School Camp Curricula." Ed.D dissertation, Berkeley: University of California, 1965.

Donaldson, George W. "Come on, You Guys - An Editorial." Journal of Outdoor Education, IV, 2(Winter, 1970), 12.

Donaldson, George W. "Research in Outdoor Education." Journal of Environmental Education, III, 4 (Summer, 1972), 9-10.

Dorsey, Albert H. "A Survey of the Comparative Status of Understanding and Reasoning in Conservation Concepts by Ninth Grade Students in the Public Schools of South Carolins." Ed.D. dissertation, Charlottesville: University of Virginia, 1972.

Douglah, Mohammed A. "Factors Affecting Adult Participation in Educational Activities and Voluntary Formal Organizations." Ph.D. dissertation, Madison: The University of Wisconsin, 1965.

Dow, June Barth. "Characteristics of Noncredit University Extension Students." Ed.D. dissertation, Los Angeles: University of California at Los Angeles, 1965.

Ebashi, Shinshiro. "Outdoor Education and Camping in Japan." Journal of Outdoor Education, II, 3 (Spring, 1968), 11-14.

El-Dib, Fathy Abdel Maksoud. "A Study to Determine the Instructional Activities Used by Biology Teachers in Ten Selected Michigan High Schools and the Values Attached to them by Students." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1961.

Frome, Michael. "Must Our Campgrounds Be Outdoor Slums?" In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 158-160.

Garrison, Lemuel A. "Managing Human Use of Parks." In C. R. Jensen and C. T. Thorstensen, eds." Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 201-205.

George, Robert Worth. "A Comparative Analysis of Conservation Attitudes in Situations where Conservation Education is a Part of the Educational Experience." Ph.D. dissertation, East Lansing: Michigan State University, 1966.

Gillian, Harold. "The Fantastic Growth of Our Nature Movement." Nature Study, XXV, 3 (Autumn, 1971), 6 & 14.

Goering, Oswald. "Outdoor Education in Germany." Journal of Outdoor Education, II, 3 (Spring, 2968), 6-10.

Graham, Marcia Albjerg. "History of the Progressive Education Association, 1919-1955." Ph.D. dissertation, New York: Columbia University, 1964.

Gunn, Janet Scott Lee. "A Comparative Study of Selected Personality Traits in College Students and Their Participation in Selected Outdoor Recreational Activities." Athens: University of Georgia, 1972.

Gustafson, John Alfred. "A Study of Those Extra-Curricular Activities Which Contribute to Nature and Conservation Education in Certain Liberal Arts Colleges." Ph.D. dissertation, Ithaca, New York: Cornell University, 1954.

Halnen, Andrew, Antoinette Powers, and Karen Christaldi. Environmental Awareness Sampler. 1971. (ED 062 121 58 pp.)

Hanson, Robert F. "Playgrounds Designed for Adventure." Journal of Health, Physical Education and Recreation, XL, 5 (May, 1969), 34-36.

Harmin, Merrill, Howard Kirschenbaum, and Sidney B. Simon. "Teaching Science with a Focus on Values." The Science Teacher, XXXVII, I (January, 1970), 16-20.

Heffernan, Helen. "They Grow Nine Feet High." Journal of Outdoor Education, I, 2 (Winter, 1967), 3-5.

Heller, Alfred. "Comprehensive Planning: Where Is It?" In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 217-218.

Henry, Wesley Raymond, Jr. "Reasons for Participating in the 1972 National Outdoor Leadership School Wilderness Expeditions." M.S. thesis, Ann Arbor: The University of Michigan, 1973.

Hess, Robert D. and Judith V. Torney. The Development of Political Attitudes in Children. Garden City: Doubleday and Company, 1968.

Hildebrand, Ronald Wayne. "Emerging and Potential State Leadership Roles in Environmental Education." Ph.D. dissertation, Boulder: University of Colorado, 1972.

Hodges, Ernest J. "Private Enterprise Reacts to Recreation Demands." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 105-107.

Hofe, G. Douglas, Jr. "Legacy of Parks." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 198-200.

Howenstine, William L. "An Evaluation of Conservation Education in Relation to the Total Program of Eight School Camps." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1958.

Howie, Thomas Richard. "The Effectiveness of Outdoor Experience Versus Classroom Experience in Learning the Cognitive Dimensions of Environmental Education." Washington, D.C.: The George Washington University, 1972.

Huffstutter, John E. "Recreation on the Beaches." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 56-57.

Huyck, Earl E. "Long-Range Camping Forecasts." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 70-71.

Jensen, Clayne R. and Clark T. Thorstensen, eds. Issues in Outdoor Recreation, Minneapolis: Burgess Publishing Company, 1972.

Johnson, Carl. Conservation - Materials Conservation. Columbus: Ohio State University, 1966.

Johnson, Tessa Mae. "An Evaluation of a Semi-Objective Method for Appraising Selected Educational Outcomes of School Camping." Ph.D. dissertation, Los Angeles: University of Southern California, 1957.

Johnson, Warren A. "Over-Use of the National Parks." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 58-62.

Jones, Orville E. "Outdoor Education in Scotland." Journal of Outdoor Education, II, 2 (Spring, 1968), 15-18.

Keith, Brian Foster. "A Study of Leisure Activities of Teachers." Ed.D. dissertation, Greeley: University of Northern Colorado, 1962.

Kellers, K. T. "Organizing Outdoor Classrooms in the Park System." The Science Teacher, XXXVII, 1 (January, 1970), 56-59.

Kelley, Earl C. "Reasons for Outdoor Education." In G. W. Donaldson and O. Goering, eds.: Perspectives on Outdoor Education, Dubuque: William C. Brown Company Publishers, 1972.

Kenyon, Raymond George. "A Nine Year Comparative Study of the Status of Conservation Education in Public Elementary Schools of New York State from 1955 to 1964." Buffalo: State University of New York at Buffalo, 1965.

Knapp, Clifford E. "Conducting a Field Trip -- Organizational Patterns for Instruction." Science and Children, VIII, 1 (September, 1970), 26-28.

Knapp, Clifford E. "School Ground Deserts Can Flower." Science and Children, VII, 5 (January - February, 1970), 30-31.

Labinowich, Edward. "A Closer Look at Environmental Education." Science and Children, VIII, 6 (March, 1971), 31-35.

Langton, Kenneth. Political Socialization. New York: Oxford Press, 1969.

Lewis, Charles A., Jr. "A School Ground Outdoor Education Laboratory." The Science Teacher, XXXVI, 8 (November, 1969), 77.

Littlefield, Daniel Franklin. "Twentieth Century American Nature Writing: A Study in Themes and Techniques." Ph.D. dissertation, Stillwater: Oklahoma State University, 1971.

Loret, John. "A Happening in the Out-of-Doors: Interdisciplinary Experiences in Outdoor Education." Journal of Health, Physical Education and Recreation, XL, 4 (April, 1969), 45-46.

Lyons, Kathleen Pauline. "A Descriptive Study of Prospective Elementary Teachers' Attitudes Relating to Environmental Problems." Ed.D. dissertation, Bloomington: Indiana University, 1971.

MacKenzie, N. J. "World Perspectives in Outdoor Education." Journal of Outdoor Education, IV, 3 (Spring, 1970), 3-9.

Mahaffey, Benjamin Donald. "A Study of Professional Recommendations for Curricular Guidelines of Environmental Interpreters." Ph.D. dissertation, College Station: Texas A&M University, 1972.

Marks, Reita Jean. "A Comparison of the Effectiveness of Group Camping Experiences on Change of Self-Concept for Campers with Professional and Non-Professional Group Leaders." Ed.D. dissertation, Morgantown: West Virginia University, 1971.

McLean, M. T., Jr. "Keeping the Outdoors for the Future." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 223-225.

McNamara, Eugene Stephen. "A Comparison of the Learning Behaviors of Eighth and Ninth Grade ESCP Earth Science Students: One Half Experiencing Laboratory Investigations in the Outdoor Environment." Ed.D. dissertation, University Park: Pennsylvania State University, 1971.

Michaelson, Mike. "Time to Tame the Abominable Snowmobiler." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 189-196.

Milek, Bob. "The Growing Crisis on Our Public Land." In C. R. Jensen and C. T.Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 72-76.

Miles, William Raymond. "Environmental Conservation Education in Minnesota's Colleges and Universities." Ph.D. dissertation, St. Paul: University of Minnesota, 1971.

Miller, Peggy L. "Curriculum Change Agent." Journal of Outdoor Education, IV, 1 (Fall, 1969), 3-5.

Morrisett, Irving, and Karen B. Wiley, eds. The Environmental Problems. Boulder: Social Science Education Consortium, Inc., 1971.

Morrison, Edward Bottom. "A Comparison of the Effects of Teaching a Twelfth Grade Government and Sociology Class in an Environment Saturated with Study Trips and Resource Speakers with the Effects of a Traditional Course of Government and Sociology when Both are Offered in a Voluntary Summer School Program." Ed.D. dissertation, Stockton: University of the Pacific, 1971.

Nelson, Gaylord. "Trails Across America." In C. R. Jensen and C. T. Thorstensen, eds." Issues in Outdoor Recreation. Minnesota: Burgess Publishing Company, 1972, 46-51.

North Star Research and Development Institute. "Factors Affecting the Present U.S. Demand for Outdoor Recreation." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 89-93.

Nowak, Paul F. "In and About Our Environment." Journal of Outdoor Education, V, 2 (Winter, 1971), 6-7.

Olson, Sigurd F. "The Meaning of Wilderness." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972,7-12.

Paquin, Thomas Francis. "Documentation and Analysis of the Development of the Camp Greenwood Environmental Education Center, an Alternative Public School at Yarmouth, Massachusetts." Amherst: University of Massachusetts, 1973.

Peden, Kenneth. "Development and Testing of an Interdisciplinary Environmental Education Unit for Seventh Grade Students," Ed.D. dissertation, University: University of Mississippi, 1972.

Pick, Diane Carol. "College and University Outdoor Education Centers - Present Status and Recommendations for the Future," Re.D., Bloomington: Indiana University, 1972.

Pulliam, Mabel Gertrude. "An Analysis of Selected Outdoor Education Programs and Recommendations for Curriculum and In-Service Education for the Outdoor Education Program of the Jefferson County, Colorado, Public Schools." Ed.D. dissertation, Greeley: University of Northern Colorado, 1969.

Randall, Charles Edgar. "People-Power and Pollution." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 170-179.

Reiger, George Bird Grinnell and the Development of American Conservation." Ph.D. dissertation, Evanston: Northwestern University, 1970.

Ronfeldt, Leo Leonard. "A Determination of Basic Urban Environmental Understandings Important for Inclusion in the Elementary School Curriculum." Ed.D. dissertation, Vermillion: University of South Dakota, 1969.

Rosenstein, Irwin. "Perspective: A State Education Department Consultant Looks at Outdoor Education." Journal of Outdoor Education, V, 1 (Fall, 1970), 8-11.

Rosenstein, Irwin and George W. Donaldson. Outdoor Education: A Guide for Planning Resident Programs. Albany: New York State Education Department, Bureau of Elementary Curriculum Development, 1972. (ED 067 202 65 pp.)

Roth, Robert E. "Fundamental Concepts for Environmental Management Education (K-16)." Ph.D. dissertation, Madison: The University of Wisconsin, 1969.

Schmidt, Thomas. "Outdoor Education in Denmark." Journal of Outdoor Education, IV, 3 (Spring, 1970), 19-21.

Schoenfeld, Clarence A. "Integrated Conservation and Outdoor Education." Journal of Outdoor Education, II, 2 (Winter, 1968), 7-9.

Scott, John C., Driver, B. L., and Robert W. Marans. Toward Environmental Understanding: An Evaluation of the 1972 Youth Conservation Corps. Ann Arbor: The Institute for Social Research, 1973. (ED 063 216 280 pp.)

Shaw, Spencer. "Today's Unsolved Problems -- Tomorrow's Crises." In C. R. Jensen and C. T. Thorstensen, eds." Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 37-40.

Sherman, Robert Clyde. "The Conservation Attitudes and Information Possessed by Elementary School Teachers in Training." Ph.D. dissertation, Columbia: University of Missouri, 1950.

Smith, Julian W. "A Decade of Progress in Outdoor Education." Journal Of Outdoor Education, I, 1 (Fall, 1966), 3-5.

Smith, Julian W. "As We See It." A Newsletter for the Exchange of Ideas on Outdoor Education, XVIII, 2 (Spring/Summer, 1973), 1-2.

Smith, Julian W. "Words, Words, Words - An Editorial." Journal of Outdoor Education, III, 3 (Spring, 1969), 9.

Smith, Julian W., Reynold E. Carlson, George W. Donaldson, and Hugh B. Masters. Outdoor Education. Englewood Cliffs: Prentice-Hall, Inc., 1963.

Solid, Myron Lee. "The Use of a Comparative Analysis as an Evaluation of a Junior High School Conservation Education Program." Ph.D. dissertation, Boulder: University of Colorado, 1971.

Sharron, Mark M. "The Problems of Environmental Management: A Manual Designed for Group Discussion, Including a Preliminary Program of Evaluation." Ed.D. dissertation, New York: New York University, 1972.

Stapp, William B. "An Approach to School Site Development." Journal of Outdoor Education, I, 3 (Spring, 1967), 12-14.

Stapp, William B., et. al. "Environmental Encounters." Journal of Environmental Education, II, 1 (Fall, 1970), 35-41.

Stegner, Robert. and Val E. Arnsdorf. A Sourcebook for Population Environmental Studies. Experimental Edition. Newark: University of Delaware, Population Curriculum Study, 1972. (ED 065 432 230 pp.)

Swan, Malcolm D. "Evaluation - A Point of View." Journal of Outdoor Education, III, 2 (Winter, 1969), 13-15.

U. S. News and World Report. "Coming: National Parks for Urban Dwellers." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 214-216.

Visher, Helene Hatcher. "A Determination of Conservation Principles and Concepts Desirable for Use in Secondary Schools." Ph.D. dissertation, Bloomington: Indiana University, 1960.

Vogl, Robert L. "A Teacher's Planning Guide to Outdoor Experiences." unpublished paper, 1967.

Vogl, Robert L. "Selected Illinois High School Superintendents' Assessments of Citizen Action Roles for Seniors Seeking Environmental Reforms." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1973.

Vogl, Robert L. and Sonia Vogl. "Environmental Problems Manual." unpublished manuscript, 1970.

Vogl, Sonia. "A Survey of Conservation Education in Wisconsin Urban Elementary Schools." M.E. thesis, Superior: Wisconsin State College, 1962.

Vogl, Sonia. "Attitude Change in In-Service Teachers Toward the Great Lakes Region in Response to Lectures or Individual Inquiry and Retrieval." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1973.

Weiss, Irving J. "Enriching Science Through Outdoor Education." Ed.D. dissertation, New York: New York University, 1971.

Werling, Donn Paul. Environmental Education and Your School Site. Chicago: Illinois Institute for Environmental Quality, 1973.

White, Christopher. "Effects of Conservation Workshops on Teachers." Ph.D. dissertation, Ithaca, New York: Cornell University, 1973.

Whitney, L. Jack. "Keeping the Faith and Your Job." The Science Teacher, XXXVII, 1 (January, 1970), 25-26.

Wilson, June Shelander Brown. "The Impact of the Publications and Action Programs of the State Committee on Conservation Education of the Michigan Cooperative Curriculum Program." Ph.D. dissertation, Ann Arbor: The University of Michigan, 1967.

Wren, Christopher. "How to Wreck a National Park." In C. R. Jensen and C. T. Thorstensen, eds.: Issues in Outdoor Recreation. Minneapolis: Burgess Publishing Company, 1972, 161-164.

Yambert, Paul A. "Let's Urbanize Conservation." Journal of Outdoor Education, III, 3 (Spring, 1969), 16-19.

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